Gender disadvantage as a risk factor for common mental disorder in women residing in Rawalpindi/Islamabad

Qadir, F

GENDER DISADVANTAGE AS A RISK FACTOR FOR COMMON MENTAL DISORDERS ~~AMONG YOUNG~~ IN WOMEN RESIDING IN RAWALPINDI/ISLAMABAD ~~PAKISTANI WOMEN~~

BY

FARAH QADIR

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Institute of Psychiatry

University of London

London, United Kingdom

Dedicated To

Ami & Salmani

Statement of Authorship

As the author of this thesis I have been responsible for all stages of the research which comprised the development of the design of the study, methodology, the field work in all stages of data collection, data entry and analysis, and the writing of the thesis. The recruitment, training and supervision of research workers were entirely my responsibility. My research workers assisted me in carrying out the interviews in the main study. Professor Prince in London provided overall supervision on methodological and administrative issues.

Abstract

I assessed common mental disorder (CMD) and its association with gender disadvantage among young women in two defined catchment areas (with contrasting socio-economic circumstances) in each city. Socio-economic status is a risk factor for CMD, and may confound or modify the effect of gender disadvantage, hence the stratified sampling. Female gender disadvantage cannot be measured directly, but is a well recognized phenomenon and has important effects across the life course. I used five proxy indicators; 1) no older brother at the time of birth (as a proxy for male preference), 2) limited parental bonding (low care and high overprotection), 3) low educational attainment 4) adverse marital circumstances (early age at marriage and low satisfaction) and 5) subjective perception. Recruitment and interviewing of 525 women aged 20-35 was completed with 98% response rate. 57% were married. The prevalence of CMD (SRQ score >=8) ranged from 26% (high SES Rawalpindi) to 83% (low SES Islamabad). Perception of parental preference for males, low care, less education, early age at marriage and low marital satisfaction were, as hypothesized, strongly correlated. I have found strong effects of all of the indicators of gender disadvantage (other than birth order) upon risk for CMD, independent of SES. I found strong evidence to support the main hypothesis of an independent association between low care and increased risk for CMD. However, for this risk factor the effect was modified by SES being significantly stronger among those living in higher SES districts.

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1 Review of Literature

1.1 Pakistan – The Setting for the Research

Pakistan is strategically positioned in the heart of South Asia, bordering China, Afghanistan, Iran and India. The country's total area is 330,697 Sq. mile, divided into four provinces: Punjab, Sindh, Northwest Frontier Province and Baluchistan .The topography of the country ranges from lofty mountains through dry plateaus, to dead-level plain, together they form about three–fifths of the total area, the remaining two-fifths being an alluvial plain, formed by the rivers. The country has a continental type of climate, strongly influencing the life and habitat of the people. Pakistan is densely populated with 140 million (excluding an estimated three to four million Afghan and Bangladeshi immigrants).The approximate ethnic distribution is Punjabi 66% , Sindhi 13% , Pathan 8.5% Urdu 7.6% Baluchi 2.5% .

Pakistan, together with India and Bangladesh account for 28% of the world's births and 46% of its maternal deaths (Abou Zhar and Royston, 1991).

1.1.1 Demography

Pakistan has one of the highest population growth rates in South Asia, estimated in mid 2002 to be 2.16% per annum. The population of Pakistan has increased four fold from 33.7 million in 1951 to 146 million in 2002. Women of reproductive age, 15-49 years, constitute about 23% of the total population, and 46% of the female population. The proportion of females in the population has also increased from 46.2% in 1951 to

48.2% in 2001. Total adult literacy rate was estimated at 45% with a marked sex disparity in favor of males; the adult female literacy rate was estimated at 28% (National Institute of Population Studies, 2001).

1.1.2 Health Services

The network of health services in the public sector consists of 865 hospitals, 4523 dispensaries, 4484 basic health units, 513 rural health centers and 262 tuberculosis centers. There were 89 929 hospital beds and 79 000 registered doctors, 3159 dentists, 28 661 nurses, 4589 lady health visitors and 21 840 midwives. The ratio of doctors to population works out at 1724 persons/doctor and 5460 persons/nurse (Ministry of Health, Government of Pakistan (GOP), 1997).

During the eighth five-year plan period (1993-98), 2015 beds were added at primary health care facilities (basic health units and rural health centers) and 3264 beds were added to secondary and tertiary care facilities (district and general/teaching hospitals). During the same time 9790 doctors, 896 dentists, 5025 nurses, 19 432 traditional birth attendants and 42,000 lady health workers were trained.

1.1.3 Modernisation

Whereas the traditional values and attitudes are based on the culture and the Islamic religious heritage, many individuals view liberal attitudes as a Western cultural invasion. Conflict between the traditional attitudes of parents and more liberal attitudes of their children is one example of conflict between the indigenous and imported cultures.

(El-Islam et al., 1988) found that higher parental liberal scores are associated with lower GHQ scores, confirming Inkeles and Smith's findings (1974) that better psychological adjustment was associated with modernization of social attitudes. Presently we find both indigenous and imported value orientations coexisting in Pakistan due to the influx of western influence through satellite television, the internet, magazines, non-government organizations and other activist agencies. Part of socialization now takes place outside the family. In addition to schools, the mass media and the peer group are important programming institutions. Traveling to less restrictive societies provides freedom from cultural ties that are left behind in the home country. Newspapers, radio and television programs provide non-traditional value orientations. All of them introduce attitudes and life styles, which are at variance with the local tradition. As suggested by El-Islam (1983) vis-à-vis the Arab peninsula, the inter-parental conflict in Pakistan revolves around patterns of relationships within the family, methods of marriage, and the emancipation of women. Educated women challenge the traditional limitations of their role in marriage and mothering (El-Islam, 1983).

1.1.4 Status of Women

Qualitative findings suggest that women in Pakistan are socialized to believe that their own interests are subordinate to those of the family group (Winkvist and Akhtar, 2000). Submissiveness and dependency are valued feminine traits and are inculcated in a girl at an early age (Khan and Reza, 1998). Those working in the field also report that a Pakistani woman achieves socio-cultural adequacy only by procuring a husband and producing children. Women are primarily respected for being mothers, more so if

they are mothers of sons. Women are expected to be virgins before marriage and are expected to show no interest in sex before marriage. They do not raise their expectations instead prepare themselves to move from one socially regulated environment (family of origin) to another potentially more complex one (in-laws) (Winkvist and Akhtar, 2000; Hussain, 1999; Khan and Reza, 1998).

1.1.5 Marriage

In Pakistan there is a strong emphasis on marriage for women. It is unheard of for single women to live alone. It is believed that women need male protection, be it from a father, brother, son or husband. Young girls are discouraged from having careers and are encouraged to get married at a young age (Khan and Reza, 1998) this inevitably leads to economic dependence. It is preferred that the woman lives in her husband's home and has the social protection of marriage rather than be a burden on other male members of her family of origin. Pakistani women are also trained to suppress their wishes especially with regard to marriage choice. Women in Pakistan are circumscribed by traditions that enforce extreme submission to men. Expressing a desire to choose a marriage partner is considered defiance of the strict familial and social rules and can result in extreme situations such as "killings in the name of honor" (Haq, 2000).

In Pakistan arranged marriage for daughters is the norm (Hussain, 1999). The family is largely responsible for the marriage arrangement with virtually no involvement from women in selecting the prospective husband. The fact that women do not assert their rights is a result of a life long conditioning that they must honor their parent's decision (Hussain, 1999). The nexus of mother-daughter relationship is significant in

the transmission of social norms and practices for the daughter to adopt and perform the gender appropriate roles (Thornton and Axinn, 1995).

In Pakistan it is impressed upon women that marriage is a life long commitment. There is an enormous stigma associated with divorce; families do not want shame and dishonor inflicted upon them by society. They therefore insist on women enduring a poor marriage rather than get a divorce. Unhappiness within the marriage or abuse is considered to be underreported in Pakistan (Fikree and Bhatti, 1999) perhaps because of women's sense of shame and self blame.

1.1.6 Mental Health

According to a WHO study very few developing countries have adequate mental health services (2001). There are only 200 trained psychiatrists in Pakistan (Shafique, 1995). The ratio of psychiatrists to population is 1: 730,000, with this heavy load very little time is devoted to counseling or therapy (Gadit, 2003). There are only two centers at Lahore and Karachi training 20 clinical psychologists every year.

At the time of Pakistan's creation (1947), there were only three mental hospitals, at Lahore, Hyderabad and Peshawar, and a psychiatric unit at the Military Hospital in Rawalpindi. It was during the 1960s and 1970s that with the development of effective methods of treatment, biological and psychosocial, that psychiatric units were gradually established in all the medical colleges of the country. Departments of psychiatry have now been established in all 18 medical colleges. Psychiatric nursing is being offered as a separate subject at all the nursing institutions in the country and a curriculum for psychiatric nursing has been developed, however currently there are

only 52 psychiatric nurses in the country. There is no provision for training of psychiatric social workers at the university departments; thirty social welfare officers have received training at the Institute of Psychiatry in Rawalpindi as part of the human resource development initiative.

Pakistan is a signatory to the Alma-Ata Declaration of 1978, which called on the global community to achieve Health for All by the year 2000. Primary health care was the designated approach to achieve this goal, having mental health among its components. The Institute of Psychiatry at Rawalpindi, a WHO collaborating center for mental health research, is coordinating efforts to implement the National mental health program of Pakistan adopted in 1986 (WHO, 2001).

The Government of Pakistan has repealed the Mental Health Act of 1912-26. A new mental health law embodying modern concepts of mental illnesses, treatment rehabilitation, civil and human rights was enacted on national mental health day, 20th February 2001.

1.2 Women's Health

A woman's health is her total well being, and is not determined solely by biological factors and reproduction (Van der Kwaak et al., 1991) By extension research on women's health should be holistic including psychological and social factors, as well as reproduction. However, women's health needs in developing countries are nested almost entirely within the rubric of 'reproductive health' or 'maternal health' (Paolisso and Leslie, 1995). The bulk of health research in low-income countries

currently focuses on "maternal and child health". Funding and development agencies focus almost entirely on reproductive health, as if this area of health is somehow discrete or separate from psychological health (Patel et al., 1998). Interestingly, a recent study in Ghana revealed that three quarters of women when asked to identify their most important health concerns, nominated psychosocial health problems such as 'thinking too much' and 'worrying too much' rather than reproductive health concerns (Avotri and Walters, 1999).

The important links between gender, reproductive health and mental health are increasingly recognized. The origins of psychological distress among women can often be traced to their difficult life circumstances (Desjarlais et al., 1995). Women's reproductive roles, such as their expected role of bearing children, may have dire consequences in case of infertility or failure to produce a male child (Patel et al., 2004). Women traditionally have held a lower socioeconomic status and have been dependent upon men (Vlassoff, 1994), thus simultaneously exposing them to greater life stresses and making them less able to change their stressful environment (WHO, 2001).

A cycle of poor psychological and physical health in many women is perpetuated from birth, disadvantaging and contributing to the poor health of future generations. Women's mental health could therefore be integrated into programs of child care such as the World Health Organization's Integrated Management of Childhood Illness Strategy (UNICEF, 1998). Early recognition of mental health problems by health workers could reduce chronicity of symptoms in these mothers and prevent long-term adverse outcomes in their children.

Women's social development is suggested to have a greater impact than economic development upon their well-being. Murthi et al (1995) examined variables affecting fertility rate among women and noted that among all the variables included in the analysis female literacy and female labor force participation emerged most forcefully. Compared to the richest states in India the fertility rate was significantly lower in the southern districts with much lower per capita income but with much higher female literacy and female employment opportunities. A study in Pakistan found that women's degree of control on household finances exerted a protective influence on their mental health (Rahman et al., 2003a). Sen (1999) stresses the active role of women, as dynamic promoters of social transformations with the potential to rectify inequalities that blight their well-being. Recent years have seen a growth in women's organizations that seek in various ways to empower women and assert access to basic rights and opportunities. There is an urgent need to reinforce and institutionalize such movements. In Pakistan they have had an important impact, but cluster around major cities.

The National Council for International Health's (1991) Conference on Women's Health addressed the higher rates of emotional distress, anxiety and depressive disorders in women and made a few recommendations with implications for public health policy. These were; 1) establishing baselines for Women's Health and well being and then measuring progress towards those standards; 2) developing ways of monitoring the impact of structural adjustment programs on women's welfare and establishing programs to mitigate their adverse effects; 3) enforcing or enacting legislation to improve women's status; 4) addressing women's need for equitable

employment and economic development; and 5) expanding education for women and girls (Jacobson, 1993).

1.3 Common Mental Disorders

Goldberg and Huxley (1992) coined the term "common mental disorders" (CMD) to describe 'disorders which are commonly encountered in community settings and whose occurrence signals a breakdown in normal functioning'. CMD, refers to non-psychotic mental disorders, it comprises a range of distress states primarily characterized by symptoms of depression, anxiety and neurotic phenomena. CMD is a contemporary classification that has replaced; 'neurosis', 'minor psychiatric morbidity' and 'non-psychotic mental disorders'. The term 'common mental disorder' refers to the fact that they are a common cause of morbidity worldwide (Ustün and Sartorius, 1995).

1.3.1 Classification

Diagnostic disagreement among clinicians is not confined to psychiatry (Kreitman, et al., 1961; Shepherd et al., 1968; Sackett et al., 1985; Jenkins et al., 1988). Medical researchers from all disciplines have long recognized the need for standardization in defining both symptoms of disease and diagnostic categories (Feinstein, 1985). Since there are so few biological markers for specific psychiatric disorders, the decision as to what criteria constitute a psychiatric 'case' is critical. Epidemiology is dependent on the accuracy of diagnostic methods (Dohrenwend, 1990a). Much of the considerable variation in reported prevalence rates, whether in community studies or

primary care studies, is due in part at least to methods of case definition and case identification (Ingham, 1982).

At one extreme, Meyer (1955) suggested that every patient was unique, and could neither be broken down into separate aspects nor classified into categories. However, classification allows us to examine causes, socio-cultural risk factors and treatments for particular kinds of disorder (Goldberg and Huxley, 1992). The two current international classifications are the WHO International Classification of Diseases, 10th edition (ICD-10), for psychiatric diagnosis, and the American Psychiatric Association's Diagnostic and Statistical Manual, 4th edition (DSM –IV) In the ICD-10 the diagnostic subcategories of CMD are mainly classified under two headings: 'neurotic, stress related and somatoform disorders' (F40-F48) and part of 'mood disorders' (F32- F39; unipolar depression included only) (WHO, 1992). No fewer than 99 sub-categories are related to CMD, as they include severity, course and the presence of additional features in a categorical system. DSM- IV has 39 diagnoses in Mood, Anxiety, Somatoform and Adjustment disorders. Such complexity has reduced the value of the ICD-10 and DSM-IV classifications for general medical settings (Goldberg, 1994).

Categorical models of disease for more severe illnesses such as schizophrenia, psychotic depression and organic mental states are now broadly accepted (Crow, 1986). However, their application to the common mental disorders is more controversial. As early as 1934, Sir Aubrey Lewis proposed a continuum between symptoms of depression and anxiety, stressing that anxiety was a general and probably integral part of depression itself. Maxwell (1973), reported a basic core set

of symptoms referred to as 'neurotic' to be common among three broad categories of patients namely: schizophrenics, affective psychoses, and neurotics. Foulds and Bedford (1975) provided evidence for supposing a 'lowest common factor' among psychiatric patients called 'dysthymic disorders'. Goldberg (1972) suggests that these states are common to all psychiatric patients and as a class have little or no differentiating power. Goldberg and Huxley (1980) concluded that the more common psychiatric syndromes encountered in primary care tend to be milder and manifest as mixed states of anxiety and depression. Cluster analysis suggests the existence of an anxiety-depressive syndrome, and more recently the dimensional approach has been reutilized by Goldberg and Huxley (1992); as well as Claghorn (1970); Overall et al., (1966); Paykel and Henderson (1977) in their model for neurosis with the application of latent traits analysis for anxiety and depression. Ustün and Sartorius, (1995) in the multinational WHO study of CMD found that some types of combined anxiety and depression occurred in approximately 13% of general practice patients. Co-morbidity rates for all specific common mental disorders exceed 50% (Ormel et al., 1994). Since the co-occurrence of anxiety and depression is so common, the application of case definitions at the community level or in the general practice setting has led many to question the relevance of boundaries between discrete classes of common mental disorders (Angst et al., 1997; Ormel et al., 1991). Goldberg and Huxley (1992), in particular, have suggested that the concept of individual common mental disorders as discrete disease entities with distinct causes, course and treatment is probably untenable.

1.3.2 Case vs. Continuum

Symptoms of depression and anxiety are common, co-occur frequently, and are continuously distributed in the general population (Goldberg and Huxley, 1992; Meltzer and Gill, 1995). Community based studies have shown that a large proportion of community and general practice patients with significant symptomatology could not be classified into any well-defined category of mental disorder (Angst, 1997; Barrett et al., 1988). It has thus been argued that case/ non-case dichotomies may be in some respects arbitrary and artificial.

Assessing psychiatric disorder on a continuum presupposes that there is some level of disturbance in mental functioning in all of us. This need not, as Goldberg and Williams (1988) have elegantly described, exclude the simultaneous validity of the notion of identifiable 'cases' of common mental disorder:

> "Standardized assessment tools like the General Health Questionnaire and Self Reporting Questionnaire are specifically concerned with the hinterland between psychological sickness and psychological health. The theoretical assumption is not concerned with the hierarchical nature of psychiatric illness but with the assessment of less differentiated ways in which individuals that are 'probable cases' differ from probable 'non-cases'. Caseness can be viewed as a continuum, with the identified psychiatric patients as the criterion, and case finding instruments can be thought of as measuring the respondents 'closeness' to or 'similarity' to this criterion."

The concept of psychological morbidity as a continuum has a variety of applications, from estimating the overall impact of symptoms at population level, to the efficient identification of risk determinants that influence the underlying propensity for mental disorder. The concept of morbidity as a clinically validated dichotomy is essential in determining need for services, and may be necessary in some circumstances for the identification of aetiological factors.

1.3.3 Measurement of CMD

Two broad approaches are commonly used to ascertain common mental disorders in epidemiological and clinical research. Clinical interviews can be structured or unstructured. Symptom scales can be used to assess symptoms of depression, anxiety or psychological morbidity as a trait; those scoring above a validated cutpoint may be considered to have a high probability of being a case.

1.3.3.1 Clinical Interviews

Dohrenwend (1994), classified psychiatric epidemiological studies into three generations. In the earliest studies, investigators were mainly dependent on agency records and key informants to identify cases (Robins, 1978), failing to identify a substantial proportion of CMD.

The second generation studies relied on direct interviews with all participants. The primary instrument was the experienced clinicians who based their diagnosis on criteria not articulated explicitly nor in complete detail but presumed to be applied in a similar way to all (Wing et al., 1981). This approach left room for disagreement between clinicians and researchers in defining a 'case'. The experts tended to agree consistently on functional psychoses, but neurotic conditions had greater variation in estimates (Wing et al., 1978). This led to the third generation of studies, using structured or semi-structured clinical interviews. Feinstein (1985) states that there are two phases of the observational process leading to the diagnoses in a clinical psychiatric assessment. First, in the assessment of psychopathology; to transform 'the observed phenomena into certain raw elements of descriptive data', and second,

combining of detected psychopathology to yield diagnoses i.e. 'the raw descriptive elements are converted into a category of final expression'. For the third generation of epidemiological studies, efforts have been made to standardize both stages.

1.3.3.1.1 Semi Structured Clinical Interviews

In the absence of any objective criteria for what constitutes a psychiatric case; interview by a psychiatrist remains the ultimate method of case identification (Goldberg 1972). A trained interviewer is recommended to administer most current Semi structured interviews including the Clinical Interview Schedule (CIS), the Present State Examination (PSE), the Schedules for Assessment in Neuropsychiatry (SCAN), the Schedule for Affective Disorders and Schizophrenia SADS;(Spitzer and Endicott, 1977) and the Structured Clinical Interview for DSM-III; (Spitzer, 1983).

1.3.3.1.1.1 Clinical Interview Schedule (CIS)

The Clinical Interview Schedule (CIS), developed by Goldberg and Blackwell (1970) was one of the earliest semi-structured interviews. Its focus was upon non-psychotic disorders, which it was used to detect in community and general practice (Goldberg and Blackwell, 1970). Like other semi-structured interviews it requires an expert interviewer to make diagnoses based on their clinical experience. It has been proved to be culturally sensitive to psychiatric symptoms in other parts of the world (Chong and Cheng, 1985; Cheng, 1988) It has now largely been superseded by the lay-administered fully structured Clinical Interview Schedule – Revised (CIS-R) (see below).

1.3.3.1.1.2 Present State Examination (PSE)

Historically, the single most influential development in assessing psychopathology has been the Present State Examination (PSE) (Wing et al., 1974). The PSE provides questions to be asked, but also encourages the interviewer to use their clinical skills and training, cross examining the patient by asking supplementary questions, and using their judgment to decide on the presence or absence of clinically significant symptoms. It was intended to mimic the form and content of the psychiatric consultation, and is a clinical interview, not a questionnaire. The PSE-10 has two sections assessing neurosis and functional psychosis; it can generate diagnoses through a set of computerized algorithms (CATEGO). PSE has now been largely superseded by the SCAN (see below).

1.3.3.1.1.3 Schedules for Assessment in Neuropsychiatry (SCAN)

Schedules for Assessment in Neuropsychiatry (SCAN) (Wing et al., 1990) is a more recent offshoot of the PSE, developed in a collaboration between the World Health Organization (WHO) and the National Institute of Health (NIH) (WHO, 1995). It has four components; the tenth edition of the Present State Examination (PSE-10), the Glossary of Differential Diagnosis, the Item Group Checklist (IGC) and the Clinical History Schedule (CHS). The data is processed using the computer algorithm (CATEGO-5), that allows symptoms to be presented as indices of definition, and ICD-10 or DSM-IV diagnostic categories.

Semi-structured interviews are cumbersome, expensive and less feasible in settings where there is a shortage of trained clinicians as well as scarce resources. While lay interviewers have been employed to administer semi-structured clinical interviews,

such as the PSE in large scale studies (Cooper et al., 1977; Wing et al., 1977; Sturt et al., 1981; Rodgers and Mann, 1986), this seems illogical. Since, they do not have the advantage of 'clinical judgment' and are administering interviews that give, at times, little guidance about rules for coding symptoms. Lay interviewers have indeed been shown, when using the PSE to estimate a higher prevalence of psychiatric morbidity than psychiatrists (Sturt et al., 1981).

1.3.3.1.2 Structured Clinical Interviews

Structured assessments present explicit instructions to be followed step by step by carefully trained lay interviewers. The questions to be asked and the rules for coding responses are fully standardized with no scope for the exercise of discretion or judgment. Lay interviewers are not expected to have preconceived notions and therefore would be more likely to follow the standardized instructions than the fully trained clinicians (Kagan, 1965), hence increasing reliability and limiting observer bias (Feinstein, 1985). In developing countries where there is a shortage of clinicians it is evidently more feasible to make use of lay interviewers.

1.3.3.1.2.1 Revised Clinical Interview Schedule CIS-R

(Lewis et al., 1992) The Clinical Interview Schedule- Revised (CIS-R) is the fully structured direct descendent of the CIS. Unlike the CIS, the interview style and coding instructions are explicitly prescribed in the interview protocol. There are a total of 14 sub-sections covering: somatic symptoms, fatigue, concentration, sleep problems, irritability, worry about physical health, depression, depressive ideas, worry, anxiety, phobia, panic, obsessions and compulsions. The recommended cut-off

score to determine caseness is 11/12 (Lewis et al., 1992). Algorithms available can generate ICD-10 diagnoses of mild, moderate and severe depressive episodes, agoraphobia, social phobia, panic disorder, generalized anxiety disorder, obsessive compulsive disorder and neurasthenia. Arguably the validity of responses diminishes over long periods of time; the CIS-R focuses its enquiry onto symptoms in the previous week. More chronic symptoms are also asked after, but these are not scored, other than in the ICD10 algorithm. It has been used extensively in the United Kingdom and has been translated into many other languages and used in many countries such as Brazil (Botega et al., 1995), Zimbabwe (Patel and Mann, 1997), Tanzania (Ngoma et al., 2003), Sri Lanka (Wickramasinghe et al., 2002), India (Patel et al., 1998), Taiwan (Cheng, 1989), United Arab Emirates (El-Rufaie and Absood, 1993), to screen for common mental disorders . It has been shown to have high inter-rater reliability (Lewis et al., 1992). The CIS-R was developed in the west and employs European perspectives on symptoms associated with emotional distress. Jacob et al (1998) studied the factorial structure of the CIS-R in four diverse cultures, namely Santiago (Chile), Harare (Zimbabwe), Rotherhithe (London) and Indian subjects in Ealing (London), and showed that symptoms of emotional distress seem to have broadly the same two factors (depression-anxiety) across the cultures.

1.3.3.1.2.2 Composite International Diagnostic Interview (CIDI)

The Composite International Diagnostic Interview (CIDI) (WHO, 1989) is a comprehensive standardized interview allowing diagnoses both for the ICD-10 as well as DSM-IV. It was developed in the framework of a major project undertaken by the WHO and the US Alcohol, Drug Abuse and Mental Health Administration. It is primarily intended for use in epidemiological studies of mental disorder, but can also

be used for other clinical and research purposes. It has been tested in many countries and is available in many languages (Wittchen et al., 1991; Sartorius et al., 1993), it is also reported to be feasible and reliable (Wittchen et al., 1989).

Recently the primary care version of the CIDI (CIDI-PC) (Sartorius et al., 1993) has been developed and used in the WHO international study of mental illness in general health care (Ustün and Sartorius, 1995). The CIDI-PC can generate diagnoses using either the International Classification of Disease, 10th edition (ICD-10), or the Diagnostic and Statistical Manual of the American Psychiatrist Association, 4th edition (DSM-IV) (APA 1994). The introduction of ICD-10-PHC, has a reduced number of categories of CMD, and may suit the clinical reality of general medical settings (Ustün et al., 1995). The primary care version of the ICD-10 (ICD-10-PC) (WHO 1996) and the DSM-IV (DSM-IV-PC) have recently been available (APA 1996).

1.3.3.2 Symptom Scales

Symptom scales for the most part apply a probability model to case finding, in which a high score equates with a higher probability of being a case. The relationship between scores and the probability of being a case is S-shaped, with scores below a point A indicating a low probability of being a case, and scores above a point B indicating a high probability of being a case, with the threshold between high and low probabilities of caseness being points A and B. Ideally, scale items are selected purposefully for their ability to discriminate in this narrow range of interest. Thus the scores from such assessments should be analysed on the assumption that they are dichotomous variables, recognizing the intrinsic property of the instrument; to be a

good indicator of caseness but a poor indicator of severity e.g. the SRQ, (Mari and Williams, 1986).

In a two-stage approach their validity is assessed when the scales are compared with a 'gold standard', usually a clinical interview. The symptom scales are broadly divided in two groups, patient self-report questionnaires and the observer rating scales. Several scales are currently used in both categories, examples of observer rating scales are; the Comprehensive Psychopathological Rating Scale (CPRS) (Asberg et al., 1978), the Hamilton Rating Scale for Depression (HAD) (Hamilton, 1960) and the Hamilton Anxiety Scale (HAS) (Hamilton, 1959). The Self Reporting Questionnaire (SRQ) (Harding et al., 1980) and the General Health Questionnaire (GHQ) (Goldberg, 1972), are examples of self report questionnaires. Although less time consuming the observer rating scales also require the expertise of a trained clinician in assessment and are therefore generally not feasible for use in large scale epidemiological studies.

1.3.3.2.1 Self Report Questionnaires (SRQ)

If the primary interest of the epidemiological study is to establish prevalence of CMD in a community, emphasize the existence of the disorder, and its association with other cultural correlates then it might be sufficient to use self-report questionnaires. Self Report Questionnaires can be self or interviewer administered. This facet is useful for developing countries with low literacy rates where respondents may require the question items read to them. If administered, this can be by a lay person. They are time efficient, for example it takes about 5 minutes to complete the SRQ as opposed to 15 to 40 minutes for the CIS-R, depending upon the extent of morbidity. These are

extensively used in community studies and general medical settings across various cultures to detect probable cases of CMD.

1.3.3.2.2 General Health Questionnaire (GHQ)

The GHQ is a screening instrument developed by Goldberg (1972), to identify non-psychotic psychiatric morbidity in primary care settings and in the community. The scale covers four areas of psychosocial enquiry; unhappiness, anxiety, social inadequacy and hypochondriasis. It has several versions (GHQ-60, GHQ-30, GHQ-28, GHQ-20 and GHQ-12), and the questions are asked on a four point response scale. It has been observed that the shorter versions have higher sensitivities while the longer versions have a better specificity (Goldberg and Williams, 1988). The 12 item version is expected to take only a few minutes; the suggested cut off is 2/3. It has been translated and used in many parts of the world including, India (Shamasundar et al., 1986), Nigeria (Gureje et al., 1992.) Brazil, (Mari and Williams, 1986), and Australia (Finlay-Jones and Burvill, 1978). The GHQ was selected to be the screening instrument of choice for the extensive international WHO study of mental illness in general health care (Ustün and Sartorius, 1995). It was considered to be a reliable and valid measure for use in cross cultural research, and translation and back translation was accomplished quite straightforwardly for a wide variety of languages and cultures.

The GHQ-12 has been validated in Pakistan (Minhas and Mubbashar, 1996), against the psychiatric assessment schedule (PAS), using the 1/2 cut off the sensitivity and specificity were shown to be 93% and 88% respectively.

1.3.3.2.3 Hospital Anxiety and Depression Scale (HADS)

The Hospital Anxiety and Depression scale (HADS) (Zigmond and Snaith, 1983), a self assessment scale, contains items to detect psychological symptoms of neurosis but excludes somatic symptoms which could be due to physical disease in medical patients. The items were selected from Present State Examination on the basis of their ability to distinguish between anxiety and depressive states.

1.3.3.2.4 Self Report Questionnaire (SRQ)

The SRQ was developed as part of the collaborative study coordinated by the WHO, on strategies for extending mental health care in the developing world. The technical stimulus came from the recommendations of a WHO Expert Committee that met in 1975 (Beusenberg and Orley, 1994). A need was emphasized in assessment of mental disorders in the developing countries that could lead to effective and alternative low-cost methods to integrate mental health with other health services. An eclectic team was involved from seven different countries in the development of SRQ. There are undoubted problems in developing a standardized instrument for use in one country and applying it in another (Kleinman, 1987). The aim, from the outset with the SRQ was to develop an instrument that was applicable and equivalently valid in different cultural settings.

The SRQ-20 was developed primarily as a psychiatric screening tool to suit primary health care settings of developing countries, it consists of 24 items, with simple Yes/No scoring system. The first 20 items are designed to detect non-psychotic disorders (Harding et al., 1980). These were selected by a consensual process from items from four instruments previously used in a variety of cultural settings: The

Patient Self-Report Symptom Form (PASSR) developed and tested in Columbia, the PGI Health Questionnaire N2 developed in India (Verma and Wig, 1977), the General Health Questionnaire (Goldberg, 1972) and the 'symptom' items on the shortened version of the Present State Examination (Wing et al., 1974). The comparison produced a list of 32 unique items. From these, 20 items were selected by agreement between the chief investigators on the basis of ease of translation and cross-cultural relevance. The instrument has been employed to detect non-psychotic morbidity in many studies including the large multi-national WHO study on mental disorders in primary care (Harding et al., 1980). It has been most commonly used in developing countries; Columbia, (Harpham et al., 2004), Brazil, (Ludermir and Lewis, 2001), Guinea Bissau, (De Jong et al., 1986), Nicaragua, (Penayo et al., 1990), India, (Sen, 1987), Ethiopia, (Kortmann, 1987), UAE, (El-Rufaie and Absood, 1994). More recently Alem (2000) used it in Butajira, Ethiopia to assess the association between psychiatric morbidity and socio-demographic risk factors in the community using a relatively high cutoff score of 11, and reported a higher prevalence among women.

1.3.3.2.4.1 Psychometric Properties of the SRQ

The SRQ has been tested in over 20 studies, including the WHO collaborative study on strategies for extending mental health care and the WHO study on mental disorders in primary health care. It has been found to be an appropriate, reliable and valid assessment for case-finding particularly in developing countries (Harding et al., 1980; WHO, 1994).

A brief overview of the studies on the validity of SRQ-20 is given in table 1.1. It has been used in community settings to elicit prevalence of psychiatric morbidity

(Harpham et al., 2004), (Ludermir and Lewis, 2001). Iacoponi and Mari (1988) assessed the psychometric properties of the Portuguese version of the SRQ-20 and reported a high internal consistency (0.81), as well as a good inter-rater reliability. There is also evidence supporting both face validity of the items and their easy comprehensibility among populations where the overall level of education is particularly low (Carta et al., 1993). However, a case-control study in Ethiopia, comparing psychiatric outpatient group, somatic outpatient group (people attending surgical, gynecological, medical clinics) and a community group serving as the control group, reported that the criterion validity of the SRQ was poor. The authors attributed this to the difference in conceptualization of questions by the investigators trained in the West and the local participants (Kortmann and Ten Horn, 1988). A more recent study conducted in a rural community in South Africa (Bhagwanjee et al., 1998), ascertained the content validity of SRQ, in which they incorporated Kortmann and Ten Horn's advice by asking the participants to explain their yes responses, as part of their pilot study. The findings indicated good content validity, and the authors reported the SRQ-20 to be a valid and cost effective screening tool for assessing CMD in the community. Differential misclassification has been reported in the assessment of CMD by the SRQ-20, where less educated people are more commonly misclassified as false positives, and better educated respondents as false negatives (Araya et al., 1992). Also men have been shown to have a greater chance of being misclassified as false negative than women, (Mari and Williams, 1986). More recently in Brazil a study examined misclassification on the SRQ-20 and observed that women were more likely to over-report complaints in the absence of symptoms (Ludermir and Lewis ,2005). The SRQ does not substitute for a clinical diagnoses (Beussenberg

and Orley, 1994) and therefore a second stage clinical interview is required in order to ascertain the specific nature of the psychiatric disturbance.

In a recent review on measuring mental health in a cost-effective manner, Harpham et al (2003), concluded that the SRQ-20 has been shown to have high face and criterion validity, is easy to use, and suitable for administration by lay workers, thus making it a cost effective instrument with which to measure community mental health particularly in the developing world.

Table 1.1: Review of Research with SRQ

Setting	First Author	Gold Standard	Study Population	Sensitivity	Specificity	Cut off
Brazil	Mari , 1986	CIS	Primary Care	83%	80%	7/8
Nicaragua	Penayo, 1990	PSE	Primary Care	81%	58%	7/8
Chile	Araya, 1992	CIS-R	Primary Care	74	77	9/10
UAE	El Rufaie, 1994	CIS	Primary Care	78.3%	75.2%	5/6
Ethiopia	Kortman, 1990	Semi-structured psychiatric interviews based on DSM III.	Primary Care	100%	71%	4/5
Italy	Carta, 1993	PSE	Primary Care	90%	70%	7/8
Brazil	Ludermir, 2001	Semi-structured psychiatric interviews based on DSM III.-R	Population Based	62%	78%	5/6
South Africa	Bhagwanjee, 1998	Clinical interviews by trained field workers based on DSM IV.	Population Based	54.4%	95.6%	8

The SRQ-20 has been used, and validated in four previous community studies in Pakistan against different clinical diagnostic criteria (see Table 1.2, below).

Table 1.2: Summary of study on the validity of SRQ in community settings of Pakistan

Setting	First Author	Gold Standard	Study Population	Sensitivity	Specificity	Cut off
Mandra	Minhas, 1995	PAS	Primary Care	63%	77%	4/5
Mandra	Husain, 2000	PAS	Population Based	80%	85.4%	8/9
Susral	Saeed, 2000	PAS	Population based	78%	81%	7/8
Kahuta	Rahman, 2004	SCAN	Population Based	80%	75%	8/9

The validity of the SRQ-20 is, however, dependent on the establishment of a cut-off score on the population that is being studied or on previous studies on similar populations (Beussenberg and Orley, 1994). The WHO manual (1994) recommends a 7/8 cutoff score. This cutoff was recommended in one of the Pakistan validation studies (Saeed et al. , 2000) and is close to that recommended in two others (Husain et al., 2000 and Rahman, 2004b). The earliest study (Minhas et al., 1995) stands out from the others both in terms of low sensitivity and specificity, and a much lower recommended cutoff of 4/5.

The GHQ-12 and SRQ-20 are both cost effective and culturally sensitive screening instruments. However, the choice of instrument for the present study was the SRQ-20, rather than the GHQ. The decision was based primarily on the fact that the latter has

been used frequently in Pakistan (table 1.2), it has been validated in Pakistan (Minhas et al., 1995; Rahman et al., 2003b), and that it was specifically designed to address the population in the developing world, thus allowing a comparison with other studies. The choice of this instrument for the present study is elaborated upon in the discussion under SRQ-20.

1.4 Culture and Mental Health

Marsella and Kameoka (1989) define culture as; " shared learned behavior that is transmitted from one generation to another for purposes of human adjustment, adaptation and growth. Culture has both external and internal referents. External referents include artifacts, roles and institutions. Internal referents include attitudes, values, beliefs, expectations, epistemologies, and consciousness". Cultural heritage determines the way in which people experience reality, understand their social world, define what is moral and immoral, explain various phenomena, including madness, and shape their sense of self, both as an individual and as part of a society. Culture influences all aspects of psychiatry, including expression of symptoms, diagnosis, illness and help seeking, perceived care and culturally appropriate remedies (Weiss, 1997) therefore, psychiatric problems are inextricably linked to their culture.

1.4.1 Impact of Culture on Presentation

Concepts of illness vary between cultures and different cultures express their symptoms differently (Kleinman, 1980). Observations of various researchers have indicated that members of traditional populations, especially those from with low socioeconomic status tend to express distress and depression through somatization (Bazzoui, 1970; El-Islam and Ahmed, 1971; Kleinman, 1977). It has been asserted

that patients from developing countries 'somatize' their depression, whereas patients in the Western world 'psychologise' depression (Leff, 1988; Goldberg and Bridges, 1988). There is also evidence of Western patients presenting their distress in somatic symptoms (Hamilton, 1989). There is growing evidence that if anything, somatic presentations of CMD are typical and it is psychological presentations which need further understanding (Kleinman and Kleinman, 1985).

It has been suggested that somatization is 'an expression of personal and social distress in an idiom of bodily complaints and medical help seeking' nonspecific to particular diagnoses (Kleinman and Kleinman, 1985). It can be a dysfunctional response to psychosocial stress that entails denial and helplessness (Dubovsky, 1997). Depressed patients tend to express more somatic symptoms (Katon, 1984), the physical symptoms such as headaches, dizziness, upset stomach reflect individual's mental states.

People from Pakistan and India suffering from CMD often present their symptoms in somatic complaints (Rack, 1982; Bavington and Majid, 1986; Bal, 1987). However, once probed they are also able to express the problem in psychological terms (Bavington and Majid, 1986; Rao, 1986). The element of uncertainty in differentiating 'somatic' and 'psychological' may arise from the difference in linguistic idiom. For example the common Urdu expression (dil mein dard or 'mera dil dukhta hai') 'my heart aches' could be regarded as either somatic or psychic. However, someone from Pakistan or familiar with the Urdu language would be able to pick up this phrase as a metaphor (Rack, 1982). Mumford et al (1991) included this item in the Bradford Somatic Inventory (BSI). In the BSI he found four principal clusters of symptoms

common in both British and Pakistani patients relating to three body zones; head, chest, abdomen, and general fatigue.

Culture consists of "...shared constraints that limit the behavior repertoire available to members of a certain group..." (Poortinga, 1992, p.10). These constraints are epitomized in role expectation in individualistic and collectivist societies (Hofstede, 1983). The structure of a society dictates also how to express unpleasant emotions. There are fewer behavioral options and greater pressure to respond in socially appropriate and acceptable ways (Triandis, 1995). How can adults in a collectivist society express feelings of distress, which often emanate from close social ties, in a way that maintains harmonious social ties? Anthropologists (Kleinman and Kleinman, 1985) have argued that interdependent individuals cloak their distress in bodily complaints precisely in order to maintain social ties.

1.5 Culture and Assessment

Two traditional methods of observation in cross-cultural research are the emic and etic approaches (Brislin et al., 1973; Murphy, 1982). They originate from linguistic terms phonetic for universal vocal utterance, and phonemic for culturally unique sounds.

1.5.1 Etic Approach

From a research perspective the 'etic' involves the evaluation of a phenomenon from outside a particular culture, aiming to identify and compare similar phenomena across different cultural contexts (Bravo et al., 1993). The underlying assumption is that

Euro-American nosological systems are universal and the core features of most disorders are invariant (Beiser et al., 1994). The etic approach uses translated versions of standardized instruments and interviews developed outside a particular culture to understand phenomena across linguistically and culturally different populations.

According to Kleinman (1987) translation is the essence of ethnographic research. Instruments are developed in a vernacular that may be quite difficult to translate into another language and strict lexical translations are often meaningless in non-western cultures.

The first step is to undertake a thorough translation of the instrument, ensuring to translate the concept behind each item (Orley and Wing, 1979), incorporating local idioms of distress and if necessary, asking a series of separate questions rather than a single question (Kleinman, 1987, 1988). The second step is to have an independent back-translation into the original language of the instrument performed (Harding et al., 1980). The third step is to negotiate the differences between the original and the back-translation and make adjustments.

Since languages differ in the manner in which they allow for similar expression of inner distress (Swartz et al., 1985), careful guidelines have been suggested for translating instruments.

Five essential recommendations regarding validity problems while translating an instrument have been made (Gaviria et al., 1984; Bravo et al., 1993).

1) **Conceptual validity** is to ensure that responses to an interview relate to a theoretical construct within the culture.

2) **Content validity** - that each item assesses a content relevant to the indigenous culture

3) **Semantic validity** – that words used in the original and the translation must have similar meaning.

4) **Technical validity** - the method of data collection should not affect results differently in two cultures. For example, using semi structured interviews such as the Present State Examination in South Africa may affect its technical equivalence because the Xhosa-speaking people find its direct interviewing style intimidatory (Gillis et al., 1982).

5) **Criterion validity** - similar items should relate to the same normative concepts in two cultures.

Many epidemiological studies have been conducted in non-Western parts of the world using instruments that were originally developed in other cultures. The Present State Examination (Wing et al., 1974), Revised Clinical Interview Schedule (Lewis et al., 1992), Self Reporting Questionnaire (Harding et al., 1980) and the GHQ (Goldberg and Williams, 1988) have been translated into different languages and been employed in many countries. The etic approach has the strength of generalizability but loses understanding of culture-specific phenomena. However, to study the prevalence of CMD in non-Western countries, an etic approach is still applicable and appropriate for comparative studies (Murphy, 1982). Although there may be indigenous

categories of mental illness, this does not necessarily invalidate the application of international psychiatric categories for epidemiological purposes (Bebbington, 1993).

1.5.2 Emic Approaches

As described by Kleinman (1987), psychiatric disorders differ in different cultures. This is due to the difference of patient's perception, experience and communication of symptoms among different cultures. For example, difficulties in the translation and explanation of English terms such as depression and anxiety in Xhosa (Gillis et al., 1982) and Zulu (Buntting and Wessels, 1991) have been expressed. It has been suggested that culturally specific signs and symptoms of a ubiquitous disorder, such as depression, will be overlooked if one uses only diagnostic criteria from a Western culture in a non-Western setting (Fabrega, 1974).

Kleinman (1977) has criticized the use of diagnostic criteria from one culture to another where the categories may not hold the same coherence, and calls it a "category fallacy", and instead promotes an emic approach using the culture specific instruments that appropriately represent the local idioms of distress (Kleinman, 1977; Kleinman, 1987). The emic approach argues that mental illness categories need to be generated from within cultures (Littlewood, 1990). This approach stresses the importance of evaluating phenomena from within a culture and its context to explicate its significance and interrelationship with other intra-cultural elements (Canino et al., 1997), therefore making this the strength of this approach. However, the data cannot be generalized because of lack of a standardized diagnostic process. Studies have attempted to develop emic instruments for specific cultural groups such as (Kinzie et al., 1982) for Vietnamese refugees in America.

1.5.3 A Middle Way - The New Cross-Cultural Psychiatry

An integration of these two different paradigms is now widely accepted (Canino, 1997; Kleinman, 1987; Littlewood, 1990; Mari et al., 1989) as a necessary basis for progress towards what has been termed the 'new cross-cultural psychiatry' (Leff, 1990). A good example of this approach is provided by the development of the Shona Symptom Questionnaire (Patel et al., 1997a) in Zimbabwe. Following extensive qualitative research, the SSQ was developed as a culturally sensitive (emic) measure assessing indigenous models of distress. Scores on the SSQ were then compared with scores and 'caseness' on the CIS-R, a measure which was developed in the UK but applies criteria that are assumed to have a universal (etic) application. The Bradford Somatic Inventory (BSI) (Mumford et al., 1991) is another example. Somatic symptoms recorded in the case notes of patients in the UK and Pakistan were checked against case notes of patients in India and Nepal. The authors observed an enormous overlap of symptoms reported in the case notes in these diverse cultures. Furthermore, they reported that the 46-item BSI covered 90% of all somatic symptoms reported in each of the five series of case notes. Its linguistic equivalence was determined by administering it to bilingual students in Pakistan, and conceptual equivalence was determined by studying the factor analysis of responses by patients with common mental disorders in Britain and Pakistan.

1.6 Intervention for CMD

Primary prevention consists of actions and measures that inhibit the emergence of disease by targeting the environmental, economic, social and behavioral conditions

known to increase its incidence, secondary prevention aims to reduce the prevalence of disease by shortening its duration (Last, 2001).

1.6.1 Primary (Prevention)

Most primary preventive interventions have focused on high risk populations. Murray (1995) and Jenkins (1992) state that primary intervention is the role of primary and secondary health care teams, which identify vulnerable high-risk groups and provide programs such as counseling or support groups. Rose (1992) rejected dichotomizing sickness and health, and argued that population based interventions alone have the potential for radically improving public health, since people at high risk are a reflection of society's norms and averages. Therefore, the easiest and most effective intervention is to shift the entire distribution under the normal bell shaped curve to the left in order to have the greatest public health impact.

Despite the growing concern that high-risk approaches are having a negligible effect on CMD (Weich, 1997), there is a lack of research on mental health promotion and population interventions in psychiatry. However, the studies that have been conducted have suggested that population interventions could have a significant effect on mental health (Halpern, 1995; Dalgard and Tambs, 1997).

1.6.2 Secondary Prevention (Treatment)

It has been shown that only a small proportion of people with neurotic disorder consult a doctor (Bebbington et al., 1997, 1999; Henderson et al., 1992), leaving behind a large reservoir of untreated psychiatric disorders (Ohayon et al., 1998;

Bebbington et al., 2003). If help is not sought in the year of onset of a disorder, delays in help seeking of more than 10 years are common in many countries (WHO and ICPE, 2000). In the United Kingdom, consultation with a primary care physician roughly doubled the chance of receiving all types of psychiatric treatment (Bebbington et al., 2003). Women's lower status in the developing world may conspire against help-seeking. First, because of reduced access to education and information they are poorly informed about health problems, and as a result fail to recognize early symptoms of disease. Second, the threshold of illness recognized by society is often higher for women, requiring them to endure in silence. Third, it has been suggested that women's lower status in the family influences both their freedom to attend public health centers and their access to money to pay for personal health care (Traore et al., 1993; Timyan et al., 1993).

Help-seeking needs to be complemented by recognition, diagnosis and appropriate treatment. Currently, much psychiatric morbidity is unrecognized and untreated or treated with inappropriate medication (Shamasundar et al., 1986; Sen, 1987). Researchers have found that when depression is presented as physical symptoms, it is less likely to be recognized and treated (Goldberg and Huxley, 1992, Paykel and Priest, 1992). The education of GPs about mental health has been the subject of study for years (e.g. Goldberg et al., 1980; Gask, 1999), and yet deficiencies certainly remain (Thompson et al., 2000). The World Health Organization has introduced guidelines to assist diagnosis and management in primary care (ICD – 10 PHC) (Ustün, et al., 1995). Experts have suggested that with resources and greater public and medical awareness, most neurotic disorders could be dealt with effectively by the primary care physician (Bebbington et al., 1997, 1999).

1.6.2.1 Pharmacological Treatment

Monoamine Oxidase Inhibitors (MAOIs) and Tricyclics antidepressants (TCAs) were the first scientifically proven drug treatment for major depression and demonstrated that it was amenable to medical intervention like other medical conditions. The new generation of antidepressants that selectively inhibit the reuptake of Serotonin (SSRIs) are now the preferred first-line treatment because they are easy to prescribe and have a superior side-effect profile. They have similar efficacy as TCAs and MAOIs but with fewer side effects (Montano, 1994; Potter and Schmidt, 1997). Studies indicate that 80% of patients given adequate doses of an SSRI become free of depression after a six month course (Berndt, 2001). If medication is terminated abruptly 50% of the patients typically suffer a relapse (Kendrick, 1996).

1.6.2.2 Anxiety Disorders

MAOIs have been found to be useful in some depressive and anxiety disorders but their use is limited because of their potential side effects (Papp and Gorman, 1995). SSRIs have shown to reduce the overall impairment in patients with panic disorders (Lecrubier et al., 1997; Black et al., 1993).They have also been efficacious in treating phobic avoidance (Lecrubier et al., 1997; van Vliet et al., 1996). Clomipramine was for a long time considered the gold-standard treatment for Obsessive Compulsive Disorder (OCD) (Zohar and Insel, 1987). More recently, Fluoxetine (Prozac) has also been found to be effective (Montgomery et al., 1993). Buspirone has been shown to be effective in the treatment of Generalised Anxiety Disorder, than placebo (Goa and Ward, 1986) and possesses equal efficacy as other benzodiazepines (Glitz and Pohl, 1991).

1.6.2.3 Psychopharmacology in Developing Countries

There is very little evidence, from developing countries for the efficacy, effectiveness or cost-effectiveness of the pharmacological treatments for common mental disorders. For example recent meta-analyses of antidepressant efficacy did not include a single study from the developing countries (Song et al., 1993; Hotopf et al., 1997). One of the first randomised trials, from Goa in South India has indicated that fluoxetine is an effective treatment for common mental disorder in primary care (Patel, 2003). While findings on efficacy should generalize reasonably well to other settings and populations, this may well not be the case for effectiveness and cost-effectiveness. For example, Hotopf et al (1996) compared the cost effectiveness of SSRIs vs., tricylic antidepressants concluded that though SSRIs appeared to be safer and better tolerated, these advantages did not justify their extra cost. Patel (1996) has since pointed out that cost of medications are culture specific and contingent upon regional economic factors, such as drug patent rules, the production of generic drugs and the variable strengths of pharmaceutical preparations. In India, the therapeutic dose of 20 mg/day for fluoxetine costs approximately the same as 75 mg Imipramine. However the most readily available formulation of imipramine or amitryptiline is 25 mg, this burdens the patient to take three tablets a day to achieve a minimum therapeutic dose, which is in turn likely to affect compliance (Patel, 2000; Pereira and Patel, 1998).

To the best of our knowledge no research has been done on pharmacological intervention for CMD in Pakistan. In view of this paucity of information it might be appropriate to consider Patel's (1996) model for categorizing homogeneity between countries, in order to share research evidence that may be cost effective and applicable.

1.6.2.4 Psychotherapy

One of the biggest problems with psychotropic interventions is side effects. Angermeyer and Matschinger (1996), presented psychiatric case vignettes to evaluate their attitudes towards psychiatric treatment. They found a clear preference for psychotherapy and a dislike of pharmacotherapy, from their perception of the specific drawbacks of tranquillizers. In the UK, Paykel et al (1998) conducted three national opinion surveys. The public overwhelmingly preferred counseling (90%) as a treatment for depression as opposed to antidepressants (24%), which were commonly believed to be addictive. Seventy-four percent thought antidepressants were fairly or very addictive.

Psychological therapy for depressive disorders has been found to be effective (McCullough et al., 1997). Cognitive behavior therapy (CBT), interpersonal psychotherapy (IPT), and psychoanalysis are the most common talking therapies. CBT and IPT have yielded rates of recovery similar to that produced by antidepressants in patients with moderately severe depression (Desjarlais et al., 1995). They are both short term therapies, typically a one hour a week for a three month period, whereas psychoanalysis may take several years. Cognitive Behavioral Therapy has been an effective treatment for major depressive disorder among outpatients (Klein et al., 2004). CBT and IPT have been shown to be equally effective in restitution for mild CMD, though less so for more severe cases (Schulberg et al., 1996).

Cognitive therapy has been used to deal with anxiety disorder with reasonable success (Power et al., 1990). Anxiety Management Training (AMT) was developed to

provide a behavior therapy for treatment of generalized anxiety disorder (GAD) (Swinn and Richardson, 1971). AMT is appropriate for any condition in which anxiety plays a major symptomatic role e.g. GAD (Cragan and Deffenbacher, 1984) or panic disorder. These studies suggest that psychotherapy is a potential valuable alternative to anxiolytic medication. Cognitive Behavioral approaches using exposure therapy, and desensitization are commonly employed for phobias. Behavioral therapy for OCD has been shown to be fairly effective with lasting effects (Yaryura-Tobias and Neziroglu, 1997).

1.6.2.5 Psychotherapy in Developing Countries

Talking treatments require trained therapists, a rare resource in most developing countries. There is evidence that conventional Euro-American psychotherapy emphasizing individuality and intrapsychic introspection are of limited efficacy with neurotic problems in African and Asian patients (Sethi and Trivedi, 1982). Patel (2000) found psychological intervention for the treatment of CMD in general health care to be no better than placebo in a randomized controlled trial. The explanations given for the ineffectiveness of psychological intervention were; lack of trained therapists, and patients' preference for physical treatment. This reemphasizes the fact that cultural impact may be greater for talking therapies, specifically for those who perceive disease in a biomedical model.

A few studies however have demonstrated effectiveness for psychological interventions. A recent study in Sri Lanka in a randomized controlled trail confirmed that CBT is a feasible, cost effective and an acceptable intervention for the treatment of medically unexplained somatic symptoms (Sumathipala et al., 2000). In a study conducted in rural Uganda Group Interpersonal Psychotherapy was shown to alleviate

depression and dysfunction (Bolton et al., 2003). Another study in Chile, examined the effectiveness of a stepped-care program including CBT components and or pharmacotherapy in the management of depression in low-income women who responded well to this program. The innovative element was role enhancement of non medical group which was given training to deliver the group psychological intervention effectively, monitor treatment progress, and act as advocates or care managers (Araya et al., 2003).

To our knowledge very little evidence is available from Pakistan. However, recently a randomized controlled trial was conducted in a semi-urban community in Karachi to assess the feasibility of 8 counseling sessions conducted by women minimally trained from the community to counsel other women in the community who were identified as having anxiety and depression to reduce the mean level of anxiety and depression. The training of women counselors lasted for 11 sessions. CBT, problem solving and supportive counseling were all used in the study. The results were positive, the counselors were able to reduce the level of anxiety and depression significantly (Ali et al., 2003).

1.7 Burden of CMD/ Prevalence

The World Health Organization (WHO) predicts a large global rise in the prevalence of CMD (Jenkins, 1997). They are the main contributor to the ill-health burden and affect one in three people within their lifetime (WHO 2001). Not only do they create a burden on health services but they also impact the society as a whole, making them a significant public health problem (World Bank Report, 1993). International studies

have claimed that though the incidence of bipolar and major depressive disorders have remained constant over the 20th century, there has been a sharp increase in incidence of mild and moderate CMD (Kessler et al., 1994).

Several large scale surveys were carried out in various parts of the world such as Netherlands (Bijl et al., 1998), Brazil (Andrade et al., 1996), Turkey (Kylyc, 1998), US (Kessler et al., 1994) during the 1990's that demonstrated a high prevalence for mild and self limiting mental disorders. Motivated and concerned about this high prevalence and its repercussions on treatment investigators performed further analyses on two US surveys, National Comorbidity Survey (Kessler et al., 1994) and the Epidemiologic Catchment Area Survey (Robins and Regier, 1991), which concluded that up to half of 12-month mental disorders were mild (Narrow et al., 2002). Similar findings were reported from other developed countries (Bijl et al., 2003).

Recognizing the magnitude of the problem around the world and appreciating that little is known about the prevalence, severity and treatment of mental disorders in the less developed countries the WHO established the World Mental Health Consortium in 1998 and has since carried out a multinational study conducting face to face household surveys of community adults in 14 countries (6 less developed, 8 developed), in the Americas (Columbia, Mexico, US), Europe (Belgium, France, Germany, Italy, Netherlands, Spain, Ukraine), the Middle East, Africa (Lebanon, Nigeria) and Asia (Japan and China). Among these China, Columbia, Lebanon, Mexico, Nigeria, and Ukraine were categorized as less developed. Recent findings from these surveys reveal that overall prevalence varies widely, from 4.3% in Shanghai to 26.4% in United States. The proportion of disorders classified as mild

(CMD), is substantial; from 33.1% in Columbia to 80.9% in Nigeria (Demyttenaere et al., 2004).

Harding et al (1980) found an overall frequency of 13.9% for anxiety and depression in four developing countries. More recent evidence from independent studies also reiterates this disease to be a ubiquitous problem. For example, community studies from Africa have reported prevalence of 24% in rural Uganda and 20-24%, in rural South Africa. Other independent community studies demonstrated similar findings; a study in Indonesia conducted in a low income area revealed an overall prevalence of 20% (Bahar et al., 1992), while in Zimbabwe the one year prevalence reported was 30.8% (Abas and Broadhead, 1997).

CMD are an important cause of disability (World Bank, 1993; Ormel et al., 1994). Disability adjusted life years (DALYs) take into account both the estimated severity of the disability caused by particular disease and the number of years of healthy life lost. According to WHO's Global Burden of Disease 2001, neuropsychiatric disorders account for 13% of DALYs and 33% of the years lived with disability (YLD). Unipolar depressive disorders alone lead to 13% of years lived with disability and rank as the third leading contributor to the global burden of disease, contributing to enormous human suffering. A survey in the UK showed that people suffering from two or more neurotic disorders took on average 28 days off per year (Patel and Knapp, 1998). A recent study from Harvard Medical School examined the impact of psychiatric disorders on absence from work. They found that on average 6 days taken off from work per month per 100 workers could be attributed to psychiatric disorders. It had an even greater impact on level of productivity; the average number of work

cutback days where people were achieving less than usual was 31 days per month per 100 workers. It has been shown in the United States that depression alone resulted in an average of 44 work days taken off for short term disability as compared to other physical ailments like heart disease, asthma and back pain (Conti and Burton, 1995). These results indicate loss of productivity, psychological disturbance and economic hardship, for the affected individuals, their family and the society as a whole. By 2020 depression alone is predicted to be the single most important cause of disability in the developing world (Blue and Harpham, 1994; Murray and Lopez, 1996), and the second most important cause of disability worldwide (Davidson and Meltzer-Brody, 1999). Worryingly, however it has been noted that psychiatric disorder has received little priority in the developing world (Lewis and Araya, 2001), as they are still struggling to tackle infectious diseases.

1.7.1 Gender Differences in Distribution of Common Mental Disorders

The gender difference in depression and other common mental disorders is one of the most robust findings in psychiatric epidemiology (see Table 1.3). Studies in the developed world have consistently demonstrated a female preponderance in the prevalence of CMD; in the US (Kessler et al., 1994) the UK (Jenkins et al., 2003) and in Canada (Bland et al., 1988). A comprehensive review of all general population studies conducted to date in the US, Canada, Puerto Rico, France, Iceland, Taiwan, Korea, Germany, and Hong Kong, reported a higher life time prevalence rate of major depression for women than men (Piccinelli and Homen, 1997). Depression is more persistent in women (Bracke, 2000) and female gender is a significant predictor of relapse (Kuehner, 1999).

Recent evidence from low to middle income countries; Zimbabwe (Patel et al., 1997b) India (Patel et al., 1998) Brazil (Ludermir, 1998; Lima et al., 1996); confirm female gender as a risk factor for CMD. Although comparative analysis of empirical studies of mental disorders across cultures reveals the prevalence of CMD to be higher among women then men the sex ratio seems to be variable.

In Pakistan relatively little data is available and there is no prospective study examining the natural course of CMD in Pakistan. However, a recent systematic review carried out on the available evidence on prevalence, etiology and treatment of CMD revealed a high overall prevalence as well as female preponderance for CMD in the community. Mirza and Jenkins (2004), in this review examined twenty studies and reported a mean overall prevalence of anxiety and depressive disorders in the community populations to be 34%, with the point prevalence varying from 28.8% to 66% for women (overall mean 45.5%) and 10% to 33% for men (overall mean 21.7%). Husain et al (2000) was the only study that reported adjusted prevalence with 95% confidence intervals, the overall adjusted prevalence was 44.4% (95% CI = 35.3 - 53.6), in males it was 25.5 % (95% CI = 4.7- 46.4), and for women it was 57.5% (95% CI= 47.5-67.5). There were 11 studies that had discussed the associated factors for the prevalence of depressive and anxiety disorders in Pakistan. Among the socio-demographic factors cited with an increased prevalence of anxiety and depression were female sex and low level of education (table 1.4). The factors perceived by women in particular to be linked to mental distress were low family income, marital problems, several children, verbal abuse by in-laws, and relationship problems with in-laws. Living arrangement demonstrated conflicting evidence, Mumford et al (1997) in their rural area study observed a positive association between CMD and married

women residing in unitary households, in contrast they found women living in joint households to report more distress than those living in unitary families in their urban area study (Mumford et al., 2000).

Compared to other developing countries the reported overall rates for CMD are higher in Pakistan, with a gender differential in that the reported prevalence appears to be greater among women (table 1.3).

Before considering the possible reasons for the female excess of common mental disorders, and for the striking excess in Pakistan, I shall review, briefly the existing literature on the risk determinants for common mental disorders.

Table 1.3 A comparison of gender-specific prevalence of common mental disorders

Study	Setting	Study Population	Outcome	Prevalence Men (%)	Prevalence women (%)	Prevalence ratio
Pakistan						
Husain, 2000	Mandra	Population Based Rural	SRQ/ PAS	26%	58%	2.2
Mumford, 2000	Rawalpindi	Population Based Urban	BSI/ICD10	10%	25%	2.5
Mumford, 1997	Susral	Population Based Rural	BSI/ICD10	25%	66%	2.6
Mumford, 1996	Chitral	Population Based Rural	BSI/ICD10	15%	46%	3.1
Other Developing Countries						
Orley, 1979	Uganda	Population Based	PSE	17%	27%	1.6
Hollifield , 1990	Lesotho	Population Based	DIS	15%	28%	1.9
Bhagwanjee, 1998	S.Africa	Population Based	SRQ/DSM IV	29%	23%	0.8
Mari, 1993	Sao Paulo	Population Based	SRQ	12%	25%	2.0
UK NPMS[1], 2000	UK	Population Based	CISR	14%	20%	1.4

1. United Kingdom National Psychiatric Morbidity Survey

*Table 1.4 Factors associated with risk of anxiety and depressive disorders in studies included in systematic review**

Study	Author & Year	Negative association	Positive association
Population based sample	Hussain et al 2000	Higher level of education	Women; unemployment; widowed, separated, or divorced; ≥4 children; loss of a child or father during childhood; marked independent chronic difficulties (housing, financial, health)
	Mumford et al 1996	Higher level of education, higher socioeconomic status	Life events, joint or nuclear family
	Mumford et al 1997	General wealth factor, higher level of education in younger men and women	Age, women living in unitary households
	Mumford et al 2000	Higher level of education especially in young women, higher socioeconomic variables in women	Age, women living in joint households,
Primary care sample	Rabbani and Raja 2000	Husband employed	Older women, longer duration of marriage, arguments with husband or in-laws, lack of autonomy
	Ali et al 1993		Women, housewives
	Ali et al 2000	Higher level of education	Women, young adults and late middle age group, married
	Dodani et al 2000	Higher level of education	More than 12 members in a single household.
Case-control study	Naeem 1992		Absence of confiding relationship with husband.
Qualitative study	Rabbani 1999	Social support from talking with husband, health care provider, friends, or religious leaders	Perceived factors: low family income, marital disputes, verbal abuse by in-laws, too many children.

*Source: Mirza and Jenkins, *BMJ* 2004; 328:794-7.

1.8 Risk Factors for Common Mental Disorders

1.8.1 Genes and the Environment

Kendler (1998) in his Virginia twin study confirmed an important genetic influence upon risk for major depression, with a heritability of enhanced sensitivity to the depressogenic effects of stressful life events (SLEs). In the same analysis, severe life events also had a strong main effect in predicting onset of depression. However, the interaction between genetic and environmental factors was more complex than had been previously suggested. The correlation of SLEs was significantly higher in monozygotic than in dizygotic twins suggesting that SLEs themselves were heritable. Some of the genetic influence on risk for major depression was thus mediated through a genetically determined propensity to select for oneself a high or low risk environment. The significance of the study is the argument against a model in which the human organism is considered a passive recipient with respect to its psychosocial environment. The results support a more interactive concept in which the individual and the environment influence one and other in a bidirectional fashion (Richman and Flaherty, 1985).

1.8.2 SES/ Poverty

Strictly defined, poverty refers to a lack of money or material possessions. In broader terms, and perhaps more appropriately for discussions related to mental and behavioral disorders, poverty can be understood as the state of having insufficient means, which may include the lack of social control and/or educational resources. It has been argued that social class and SES measures such as education, occupation and

income stem from two different theoretical orientations, and focus on different aspects of inequality (Dohrenwend, 1990b; Wohlfarth, 1997). According to Wright (1979), social class focuses on control as the essence of socioeconomic inequality, in that it influences educational attainment, and material standards of living, whereas, socioeconomic status, (SES) focuses on prestige. These have been suggested as the proximate determinants of CMD in a population (Possas, 1989). However, the intermediaries between social class and CMD may vary over time, across culture (Marmot et al., 1987) and according to economic development. It has been suggested that class of origin or SES affects parenting behavior (Rutter and Madge, 1976), this may have implications for scholastic attainment. Individual's education and training (Iacoponi et al., 1991; Power et al., 1991) in turn, has been observed to influence their subsequent socioeconomic circumstances (Urani, 1995). The socioeconomic status that one is born into might then play a role in the kind of parenting one receives as well as future advancements and achievement in life.

A consistent association has been reported between the prevalence of the common mental disorders and low socio-economic status (Rodgers, 1991; Meltzer et al., 1995) Causal associations have also been proposed with unemployment (Warr, 1987) and poverty (Bruce et al., 1991). In developing countries also data from studies in Brazil, Chile, India and Zimbabwe show consistently that common mental disorders are about twice as frequent among the poor as among the rich (Patel et al., 1999). In a deprived area of Brazil, Ludermir and Lewis (2001), observed education and income to be the most powerful indicators of social class disadvantage related to CMD and demonstrated an independent effect of low educational attainment and low income.

A recent review of eleven community studies conducted in various low to middle income countries including Pakistan, Patel and Kleinman (2003) found a statistically significant association between prevalence and indicators of poverty, especially with low educational attainment, many studies showed a relationship with other indicators such as poor housing and low income. The authors suggest that for vulnerable individuals, poverty and common mental disorders may perpetuate a vicious cycle of poverty and CMD. Mirza and Jenkins (2004), conducted a systematic review on existing evidence on CMD in Pakistan, they reported that socioeconomic adversity was a major risk for anxiety and depression, particularly among women, indicators such as chronic difficulties with housing and finances demonstrated a strong association with CMD. One study examining social support and the experience of depression revealed that women perceived financial problems along with interpersonal problems and family problems to be causative contributors in their psychiatric morbidity (Tareen, 2000). While individual perceptions of illness are not evidence of a causal association, the universal nature of perceptions may be considered as cultural validation of the epidemiological association reported in several studies (Patel and Kleinman., 2003).

Gender is certainly an important variable in understanding the effects of poverty upon CMD. Studies have indicated an increased risk of developing psychological disorder among women of low socio-economic position, without paid employment outside the home, and who care for small children (Brown and Harris, 1978; Surtees et al., 1983). Women constitute more than 70% of the world's poor (UNDP, 1995) and carry the triple burden of productive, reproductive and caring work. Even in developed countries, lone mothers with children are the largest group of people living in poverty

b(Belle, 1990) and are at especially high risk for poor physical and mental health (Macran et al., 1996; Lipman, et al., 1997).

In Pakistan, poverty is wide spread; in 2000 one third of the population was below poverty line. The female population is more adversely affected by poverty because of the preferential treatment of males over females in Pakistan. The participation of women in the Gross Domestic Product (GDP), (female as % of male) is around 30% and their earned income share, (female as % of male) is 26% (Haq, 2000). This is perhaps attributable to the fewer employment opportunities made available to women outside of home thus making a larger proportion of women susceptible to the detrimental affects of poverty. Links between economic hardship, emotional deprivation, and psychological distress in women have been traced in anthropological studies conducted in Pakistan (Naeem, 1992).

Accurate assessment of women's economic status is problematic. Household income may not be evenly distributed, especially if women are subjected to coercive control over all aspects of their lives including spending money (WHO and ICPE, 2000). In a recent study in a Pakistani rural community examining postnatal depression, Rahman et al (2003a), ascertained women's financial independence by enquiring if they were given money to spend on running the household by head of the household, and if they could take independent decisions on how to spend it, since too few women were actually employed outside of home, the authors observed a statistically significant association between women's financial independence and depression. They also found husband's lack of education and being unemployed to have an association with the woman's mental health. Using the same approach of financial empowerment, Rahman et al (2004a) in a prospective cohort study found maternal financial

empowerment to have a positive impact on infant growth and well being, while relative poverty of the household was negatively associated with the growth, development and well-being of the child.

In every country, gender development continues to lag behind human development (UNDP, 2000) or as an earlier Human Development report (UNDP, 1997) put it: ' no society treats its women as well as its men'. The situation is worse in developing countries. Explanations proposed for gender differences in psychiatric morbidity in Asia, Africa, the Middle East, and Latin America suggest mediation via socio-economic and social disadvantage (Dennerstein et al., 1993).

1.8.3 Limited Education

Data from developed countries show that educational qualifications were good predictors of women's health (Arber, 1997). Evidence from the developing countries have consistently demonstrated the same and have confirmed that poor educational achievement or the lack thereof is associated with higher rates of CMD (Abas and Broadhead, 1997; Bhagwanjee et al., 1998). A primary care study carried out in Syria, to examine the socio-demographic correlates of CMD among low income women, observed education to be the most protective factor against CMD. Women's lack of education or low educational attainment was reported as the strongest predictor of psychiatric morbidity after controlling for all potential confounders (Maziak et al., 2002).

In order to examine the universal nature of the association between risk factors such as female gender, poverty and low educational attainment with CMD, that have already been ascertained as such in the developed world, Patel et al (1999), brought

together data collected from five different studies, both in primary care and the community, from diverse cultures in different stages of economic development, that is Zimbabwe, India, Brazil, and Chile. All five studies showed a clear association between low education, low income and CMD. One of the more obvious advantages of education is the potential of improving one's socioeconomic status. Since educational achievement opens future prospects for higher education, which typically enhance one's opportunities of employment outside of home. Patel, (2001) therefore suggests that efforts for improving education should focus on prevention of attrition prior to the completion of secondary school since the job market does not accommodate individuals with less than 10-12 years of education. Some studies have indicated a 'dose-response relationship' between level of education and the risk of psychiatric morbidity (Araya et al., 2001). A systematic review (Patel and Kleinman, 2003) of community based studies conducted in six low to middle income countries, examined the association between indicators of poverty and CMD. The findings revealed a consistent association between CMD and low level of education as an indicator of poverty. Thus suggesting that disparity in educational attainment could be one of the most important factors perpetuating social inequalities in psychiatric disorders in these countries. Since the studies were community based reverse causality could not be excluded as an explanation for the demonstrated association. However, it could be argued that access to school usually happens early in life, prior to the development of CMD, therefore, it might be unlikely that consistent association between low education and CMD was due to reverse causality.

In Pakistan, the literacy rate for females is 33% compared to 59% for males. In urban Punjab, literacy rates vary from 41% to 87% across fifths of household SES. However, in every stratum the prevalence of literacy for women is only around two-

thirds that for men. In Pakistan, only 25% of women, compared with 49% of men have completed primary education. Only 19% of women have attained Matriculation, and only 5% have Bachelor's Degrees (Federal Bureau of Statistics GOP, 2000). There is a clear gender bias in access to education; for uneducated girls, 31% of parents 'did not agree' with the child attending school, compared with 7% of parents of uneducated boys.

Several cross-sectional epidemiological studies in Pakistan reveal an association between level of education and CMD. For example, a community survey in urban Rawalpindi found that women with higher levels of education had a lower prevalence of CMD, especially younger women (Mumford et al., 2000). A similar study in a rural area found that literate participants had lower levels of emotional distress than the illiterate (Mumford et al., 1996). Education has been shown to favour recovery in the context of psychological treatment among Pakistani women (Ali et al., 2003).

Lack of education has widespread consequences, many of which have clear relevance to health, including mental health. For example, Haq (2000) reports that 18% of uneducated women had discussed family planning with their husbands, compared to 29% and 44% among primary and more educated women respectively. Women with education also choose to marry at a later age both because of the time required for studies and also because education empowers them with greater freedom to make decisions; this stems in part from their greater control over household resources (Dréze et al., 1995).

It is also evident that lack of education presents adverse consequences for individual women and long-term impacts at population level. First, keeping women illiterate clearly retards economic growth; in Pakistan, women with a primary education earned 24% more than those with no education (Ashraf and Ashraf, 1996). Women constitute only 28% of the Pakistani labour force (WHO, 1998). Second, lack of female education is self-perpetuating; in Pakistan women with less than primary schooling demonstrated a larger gender bias in sending their daughters to school than did women with more than primary schooling (Sathar, 1995).

1.8.4 Life Events

Both acute life events and chronic difficulties are consistently reported to be associated with risk for CMD. In developed countries, a consistent association has been found between adverse life events and depression (Paykel, 1994). There is evidence that CMD is causally associated with threatening undesirable life events (Brown and Harris, 1978; Brown et al., 1986), particularly those with a negative impact (Paykel et al., 1980). It has been estimated that recent life events accounted for more variance in liability to depression compared with genetic factors (Kendler et al., 1993). In Zimbabwe, severe adverse life events, measured using the detailed Life Events and Difficulties Schedule (LEDS) (Brown and Harris, 1978), were strongly associated with the onset of depression (Abas and Broadhead, 1997). In that study, 73% of those with CMD identified a social stressor as a reason for their symptoms. Among these social stressors, the most frequently mentioned adverse life events were marital crisis, infertility, child death and economic hardship.

An etiological role of major long-term difficulties in the onset of depression have also been suggested (Brown and Harris, 1978, chapter 8). Mental distress in developing countries has been shown to be associated with long term difficulties and a sense of helplessness especially vis-à-vis marriage related circumstances, large number of children, and poor economic conditions (Tafari et al., 1991; Rabbani, 1999). Feelings of self-depreciation, guilt and hopelessness have also been consistently associated with women's mental health in the developing world, Uganda (Orley and Wing, 1979), Zimbabwe (Abas and Broadhead, 1997). The high levels of such symptoms among women may be linked to their position in society, where ways of achieving status and of facilitating change are limited. Gilbert (1989) has outlined a number of depressogenic situations: 1) direct attacks on a person's self-esteem that force them into a subordinate position; 2) events undermining a person's sense of rank, and 3) blocked escape. Depression is believed to emerge from helplessness if the person cannot see hope of change occurring in the future (Beck et al., 1979; Abramson et al., 1989).

In Al-Ain (United Arab Emirates) a recent community survey reported the life time rates of depression among males and females to be 2.8% and 10.3%, this is the highest reported male female ratio in the literature (Daradkeh et al., 2002). The findings indicated that women compared to men were subject to more chronic life difficulties and depressed women were subjected to more recent life events. The above mentioned ratio between males and females however, falls in the category of participants who were not exposed to recent life events. The authors suggested that chronic difficulties perhaps make women more vulnerable to depression and the added recent undesirable events perhaps bring the depression to surface, which might

explain the fall in male female ratio in the category of participants who were not exposed to recent life events.

In Pakistan there is some evidence supporting an association between recent life events and prevalence of CMD. For example Husain et al (2000) in their two stage cross-sectional survey observed a positive association between CMD and marital status (separated, divorced or widowed), having more than four children, personal childhood bereavement, specifically loss of a father, death of a child, unemployment, housing and other financial adversities.

A recent community study examining life events and lack of social support as potential risk factors for antenatal and postnatal depression demonstrated a statistically significant positive association between depression and financial difficulties especially when the husband was made redundant, housing problems, relationship problems with a significant family member and marital difficulties. Two community studies however, did not report an association between disturbing life events in the family such as recent births, deaths, marriages, illnesses, accidents and CMD (Mumford et al., 1996; Rabbani and Raja, 2000).

1.8.5 Physical Health

A considerable number of studies have repeatedly demonstrated strong associations between physical and psychiatric disorders in the general population (Shepherd et al., 1981; Wells et al., 1988). For example in the Los Angeles survey of the Epidemiological Catchment Area study, it was found that the prevalence of psychiatric disorders in the medically ill was between 1.5-2.0 times that in physically

healthy controls (Wells et al., 1989). Same were also observed in West Cantabria Survey in Spain (Vazquez-Barquero et al., 1987).

WHO collaborative study of psychological disorders in General health Care Settings has also confirmed that for each of the three common psychiatric disorders; depression, anxiety, neurasthenia, there is an association both with the number of medically explained physical symptoms, and the general practitioner's rating of physical illness (Kisely and Goldberg, 1996; Ormel and Silva, 1995).

There are findings which report physical illness and disability contributing to the onset, exacerbation, and recurrence of depression (Aneshensel et al., 1984; Von Korff et al., 1992; Kennedy et al., 1990). On the other hand evidence suggests that major depression contributes to the onset of physical morbidity and mortality (Bruce and Leaf, 1989; Wells et al., 1992; Klerman and Weissman, 1992).

A longitudinal study using the prospective data from the Epidemiologic Catchment Area survey examined the risk factors for an increased risk for the first onset of major depression among adults residing in New Haven, USA. The findings indicated that participants who reported poor physical health such as that they were confined to their bed or chair, or house, were significantly more likely to be at risk of major depression across all age bands. Furthermore, the authors reported that the odds ratio for respondents aged 80 years or over still did not significantly differ from the age band of 18-44 years and it was concluded that there was no evidence that the physical health varied with age, vis-à-vis risk for onset of depression (Bruce and Hoff, 1994).

Depression is often accompanied by somatic symptoms (Simon et al., 1999). It has been observed that for people whose symptoms were explained by organic diseases, the prevalence of psychiatric disorder was 15-20%; whereas for patients with medically unexplained symptoms it was approximately 50% (Van Hemert et al., 1993).

Similar findings between physical health and CMD have also been observed in developing countries. For example, a two stage community study was carried out in Mali using a locally standardized screening instrument that identified strong associations between genito-urinary tract disease, tuberculosis, disabling cardiopathies and common mental disorder. However, no such associations were noted with acute malaria or bilharziasis (Carta et al., 1997).

1.8.6 Social Support

It has been suggested that lack of emotional support during childhood from parents or primary caregivers has an influence on risk of subsequent depression (Kaslow et al., 1994), and that attachment in early life is critical to psychological development (Bowlby, 1973; Gunnar and Nelson, 1994). Links between social isolation and reduced psychological well-being may be traced back to Durkheim (1951). Smaller social networks, fewer close relationships, and lower perceived adequacy of social support have all been linked to depressive symptoms (Barnett and Gotlib, 1988). Social support has been consistently shown to act as a protective factor from a variety of illnesses and diseases (Cooper et al., 1999). Berkman and Syme (1979), measured individual levels of social relationships and other classical risk-factors in Alameda

county, California, Mortality rates for those with few social relationships were 2 to 3 times higher than for those with larger social networks even after controlling for other factors. In studies of cardiovascular reactivity in which participants were given a challenge related to public speaking, the availability of support though not actually provided was shown to dampen cardiovascular reactivity (Kamarck et al., 1990). It has also been demonstrated that low individual social networks are longitudinally correlated with an increased risk of accidents, cardio-vascular disease and most importantly in mental health terms, suicide (Kawachi et al., 1996).

Two models have been suggested to explain the mechanism by which social support influences health outcomes; first, the structural component of social relationships for example, social networks, connectedness, active participation in societal activity, membership in clubs etc, and second the cognitive component such as perceived support, trust, social cohesion and perceived civic engagement. Collectively the two have been referred to as the social capital (Lynch and Kaplan, 1997). Conceptual work that links mental health with social capital hypothesizes that social capital affects mental health status through different mechanisms. Kawachi and Berkman (2001) suggest that the two models are not mutually exclusive; rather they may help to explain the influence of specific aspects of social relationships on psychological health. The structural aspect including participation in community activities, connecting with social networks, accessing both formal and informal institutions may help reduce the negative impact of stressors or adverse life events by providing additional support in general. On the other hand, the cognitive aspects such as perceived availability of functional support, could buffer the effects of stress that are damaging to health by enhancing an individual's coping abilities. For example,

perceived availability of social support in the face of a stressful event may lead to a more benign appraisal of the situation, thereby preventing a cascade of ensuing negative emotional and behavioral responses (Thoits, 1986). Rose (2000), has also suggested that structural and cognitive aspects of social support together ought to be especially good at providing emotional support that reduces the likelihood of emotional depression. Taking it a step further Harpham et al (2002) contended that structural and cognitive aspects of social support could reduce the stressors and risk factors for mental ill health, such as promoting good health through awareness raising as part of the structural component and reducing the adverse impact of a life event such as bereavement in the form of a close trusting relationship serving as a buffer.

Wethington et al (1987) have suggested that the fact that women report significantly higher rates of psychological distress than men could partly be explained by gender differences in social networks involvement. Summarizing these gender differences, Belle (1987) observed that women compared to men tend to: 1) maintain more emotionally intimate relationships 2) they mobilize more social supports during periods of stress, and 3) provide more frequent and more effective social support to others.

Among married couples, it has been shown that supportive aspects of the relationship such as expressed satisfaction with spouse, and having the spouse as the primary confidant appear to be much more strongly linked to the mental health of women than to men (Barnett and Gotlib, 1988). This could be a reflection of the gender inequalities in the domestic relationships, especially in countries where an over all gender disadvantage among women is rife. For example household authority and

bargaining power with respect to access to financial resources, could result in women being more exposed to the vagaries of their partner's support.

At a structural level, it might be argued that societal networks may be more harmful than helpful for women with low resources who often face greater difficulty in responding to the needs of network members (Belle, 1987), this might be particularly true for developing countries that do not offer extensive societal level networks, and perhaps have restrictions imposed on women in accessing any that are available.

Patel (2001) has eloquently argued the case for more attention to be paid to mental health in developing countries. He argues that social factors known to be linked to depression and other mental illness are on the increase throughout the developing world. The growing interest in social risk factors for mental health in developing countries coincides with the development of social capital research and reiterates the need to further examine the social model of mental health, with a focus on enhancing the existing social capital, and assess the need for further improvements.

In Pakistan, as with other traditional cultures, responsibility and decision making lies with the head of the family or with the family as a collective. Hierarchies within family are respected and taken for granted (Fremdgen, 1990). It is a culture where social harmony and familial cohesion are of utmost importance, lack of social support or social acceptance could be a strong risk factor to developing CMD. In describing the Pakistani system Stompe et al (2001) stated that the relatives serve to provide one with respect, protection and social support, any dissonance in this balance leaves the individual exposed and vulnerable.

A recent prospective cohort study (Rahman et al., 2004a), assessed the role of social support while examining mother's mental health and its impact on her infant's growth and well being. The authors used the traditional concept of chilla which is a postdelivery period, as the proxy for assessing social support provided to the mother. It is a 40 day postdelivery period in which the mother is confined to her residence in order for her to avail better care from family and friends in taking care of her baby, she is relieved of all her domestic obligations and she is entitled to and is presented with fortified dietary items as gifts by friends and relatives. The completion of the 40-day chilla period is a good proxy indicator of social support because it encompasses support from the family as well as from the community, that is it addresses both the structural concept as well as the cognitive aspect of social support.

The evidence vis-à-vis family systems and risk for CMD in community studies indicated that those women who were living in unitary households in rural setting were more likely to be a case (Mumford et al., 1997). On the other hand Mumford et al (2000) observed an association between CMD and women living in joint households, in an urban slum area. It is plausible that joint family system is protective for women residing in rural areas, whereas the protective effect of extended family is reduced in the low income city district because it is modified by the household income, thus making the women living in a joint family system in the urban slum area more vulnerable to CMD.

A case-control study examining vulnerability factors associated with CMD among women reported a strong and significant association between absence of a confiding

relationship with husband (Naeem, 1992), and a qualitative study elicited lack of social support from the husband to be frequently reported by women (Rabbani, 1999). Husain et al (1997), in their two stage assessment of adverse social circumstances and depression among Pakistani's residing in UK attending an outpatient clinic, reported a statistically significant risk of depression in the absence of a confidant.

Lynch and Kaplan (1997), describe social capital as the 'stock of investments, resources and networks that produce social cohesion, trust and willingness to engage in community activities' (p. 307). In other words, social capital has a structural component (networks, connectedness, associational life and civic participation), and a cognitive component (perceived support, trust, social cohesion and perceived civic engagement). Cohen and Wills (1985) have suggested two models to explain the mechanisms by which social relationships influence health outcomes; main effect model and the stress-buffering model. The stress-buffering model suggests that social support is only relevant to those who are under stress, whereas the main effect model posits that social relations are protective and have a beneficial effect for all regardless of their vulnerability to stress.

1.8.7 Marital Circumstances

Marriage is associated with low mortality and good health, but this effect is generally stronger for men than women (Jacobs, 1977). Marriage also protects against depression among men but not among women (Gove, 1972). A finding variously attributed to the mundanity of housework, the unfavorable position of women who work outside the home (Gove, 1972), and to the differences in the number and range of roles ascribed by gender and marital status (Thoits, 1986), as well as the burden of

childcaring (Elliot and Huppert, 1991). Studies in the West suggest that women generally report lower satisfaction in marriage (Fowers, 1991; Schumm and Silliman, 1996) and that marriage is detrimental for women since they are more prone to psychological distress as compared to single women (Bernard, 1975). It has also been suggested, that the higher the level of marital dissatisfaction the more at risk women are to mental illness (Whisman, 1999). Similar associations have been reported in studies conducted in non-western parts of the world such as China (Shek, 1994) and Zimbabwe (Abas and Broadhead, 1997). Interestingly, Brown et al (1995) found that when women initiated marital separation, only 10% subsequently developed depression but when the husband initiated it almost 50% developed depression. Where women lack autonomy, decision making power and access to income, they are left with very little control over the determinants of their mental health.

In Pakistan, studies of psychiatric morbidity have invariably indicated marital problems as contributing to Common Mental Disorders (Ali et al., 1993), Young married women under the age of 35 years have a higher prevalence of psychiatric disorder compared to older married women (Mumford et al., 1996; Dodani and Zuberi, 2000). In addition to marital discord, mental and physical abuse from husband, helplessness, low self esteem (Niaz, 2001), financial constraint imposed by the husband (Fikree and Bhatti, 1999), and in-law problems (Rabbani and Raja 2000), are some of the salient contributing psycho-social stressors for higher rates of CMDs among women in Pakistan. Married women are also more likely to attempt suicide (Khan and Reza, 1998). The divorce rate in Pakistan is quite low at 0.3 per 1000 population (Khan and Reza, 1998) but this may not truly reflect the state of marriages

for women in Pakistan. To our knowledge, the construct of marital satisfaction has not been previously examined.

1.8.8 Parental Care and Parental Bonding

The type of relationship that parents establish with their children during childhood has been of great interest in psychology and psychiatry, both from the aspect of its possible influence on cognitive and emotional development and because, when it is not appropriate it may constitute a risk factor for psychiatric disorders.

Bowlby (1976) highlighted two important dimensions in the optimal parental relationship; a secure affectionate base where the parent is both available and responsive, and allowing and encouraging the child to distance themselves progressively from the secure base in order to achieve social competency. Studies principally involving factor analytic techniques have suggested that 'care' and 'overprotection' are the key dimensions underlying parental attitudes (Schaefer, 1965, Raskin et al., 1971). These dimensions of 'care' and 'encouragement of independence' are central to measures of parental style (Gerlsma et al., 1990). In their reverse form, that is to say parental indifference and over protection, they are thought to dispose strongly to depression in adulthood. The manner in which a child is raised by her parents has long been considered a crucial determinant of later mental health (Maccoby, 1992; Perris et al., 1994). Numerous scales have been developed to assess 'parenting' (Holden and Edwards, 1989), and many studies have examined the relationship between parenting and risk of psychopathology later in life (Perris et al., 1986; Silove et al., 1991). The availability of reliable and valid measures of childhood experiences has given added impetus to the investigation of links between childhood

experiences and adult mental health (Brewin et al., 1992). The Parental Bonding Instrument (PBI) developed in Australia (Parker et al., 1979) as a self report inventory measures parenting in the first 16 years is one such instrument which has been the focus of considerable research in the past decade (Parker, 1990). The PBI separates parenting into care and overprotection. Evidence indicates that it has excellent psychometric properties (Parker, 1989), and that scores on its scales relate to actual parenting behavior (Parker, 1984). These are discussed in greater detail under validity of PBI. Both low care and overprotection by the mother as assessed by the PBI have been included in the present study as a proxy measures to elicit women's experience of gender disadvantage in the form of low care and high overprotection in their early years as a potential risk for CMD in adulthood.

There is substantial evidence that adverse experiences in childhood are associated with an increased risk of adult psychiatric disorder (Bifulco et al., 1991; Mullen et al., 1993; Kendler, 1996), and with impaired adult intimate relationships (Quinton et al., 1990; Rutter et al., 1990; Rodgers, 1996). Over the last decade, a body of research has grown to provide empirical support for this assertion. Importantly, reports of adverse parenting have been associated with higher prevalence of diagnoses of neurotic but not endogenous depression (Parker et al., 1987).

Although Parker has consistently found that the combination of low care and high overprotection signified as 'affectionless control' best predicts liability to symptoms of depression and anxiety (Parker, 1979, 1981), more recent studies have found no interaction between care and overprotection in terms of increasing the liability to depression and anxiety (Kendler et al., 2000). Instead more attention is now paid to

parental care to be a better predictor of mood and anxiety symptoms as well as others (Kendler et al., 2000; Mackinnon et al., 1993; Duggan et al., 1998). It has been demonstrated, that low parental care provided the highest risk to less severe forms of depression (Parker and Hadzi-Pavlovic, 1992). Parker et al (1995) confirmed the comparative importance of low parental care as a risk factor for adult depression and its salience within the general community.

Utilizing existing data from the Australian National Health community survey sample, Mackinnon et al (1993) investigated the relative importance of the care and overprotection dimension to risk of depression. The authors carried out a logistic regression analyses to examine interaction between overprotection and care and to assess additive effects of care and overprotection in the model. Since the interest was to examine lifetime occurrence of depression rather than point prevalence age was included as a covariate in all models examining risk for depression; model one included only care, model two examined overprotection exclusively, in model three care was added after overprotection, in model four overprotection was added after care and finally interaction was examined between protection × care. Almost identical results were found under all conditions in that adding care to all models significantly improved the fit and was associated with odds ratios for depression of 1.87 to 9.17. Whereas if care was in the model adding overprotection did not improve model fit. Odds ratios ranged from 1.07 to 1.99. The findings confirmed that lack of care was the primary risk factor for depression.

Parker (1979) reported parental characteristics in relation to psychiatric morbidity levels among psychology students, and based on a regression analysis showed that a

low maternal care score was the best predictor of both anxiety and depression in the participants. Maternal influences were clearly of greater relevance. Other findings have contended that maternal parenting typified by low care, is a significant risk for adult depression among women. For example, Oakley-Browne et al (1995) compared women with a recent episode of major depression and women who had never been depressed on a number of childhood experiences including parenting style, assessed by PBI care and overprotection subscales. The findings revealed that when all childhood experiences were considered simultaneously in a logistic regression analysis, only low maternal care demonstrated a four fold increased risk of major depression.

In Pakistan, there is good reason for considering that parenting may be particularly salient to women's mental health, given the cultural tendency towards male gender preference. A daughter who is little valued in her family of origin is likely to internalize this into her cognitive schema, hence carrying this disadvantage throughout her life and making her vulnerable to continuing neglect or abuse. Cultural differences should also indicate the need for caution in transferring western concepts of 'good' and 'bad' parenting to other settings. Kagitcibasi (1996) suggests that there is more parental control, and that control is more tolerated in Asian cultures, including Pakistan. Chao (1994) suggests that South East Asian families tend to score highly on the authoritarian dimension of parenting because control is considered as part of parental endearment and caring, rather than as a negative attribute.

In a study examining perceptions of parental rearing styles by adolescents currently studying in Pakistani schools and colleges, Stewart et al (1999), report that parental

warmth as assessed by an inventory of parenting styles that has been previously used by the author and others (Stewart et al., 2000b), to reflect parental care and warmth were shown to be associated with positive outcomes, such as one's satisfaction with life. However, there was no association between participant's perceived general health and parental warmth. Findings revealed that girls perceived their parents as being significantly warmer and more autonomy granting than did boys. The authors attributed this to the fact that these girls were being brought up by parents who were cognizant of the growing need of women's education and the daughters appreciated this dimension of care.

Stewart (1999) has argued that the western dimensions of warmth and control need to be considered in conjunction with other Asian or Pakistani constructs that might address the indigenous population more appropriately. For example in another study on young Pakistani nursing students, Stewart et al (2000a), using the same scale as above, indicated that parental warmth was a universal salutary dimension. However, the authors suggested that when items on parental 'training', proposed by Chao (1994) as having relevance for other Asian cultures, such as the concept of *tarbiat* in Pakistan, were included with warmth items, they provided a stronger association with general perception of health, life satisfaction, relationship harmony and self esteem outcomes. To our knowledge no previous study has examined perception of parenting styles and its association with mental health.

1.9 Explanation for Gender Difference

While gender difference in risk for CMD is one of the most established findings in psychiatric epidemiology (Desjarlais et al., 1995), research has not been able to present a convincingly comprehensive etiological account of sex differences in the rate of depression (Bebbington, 1998). 'Gender' of course refers not only to the biological or sex differences between men and women but also to the context of their behavior in society, the different roles that they perform, the variety of social and cultural expectations and constraints placed upon them by virtue of their sex and the ways they cope with them (Vlassoff, 1994). It is clearly important to consider whether the determinants of the gender difference in risk for CMD are predominantly biological or social.

1.9.1 Biological explanations

Studies have shown that the gender effect on both depression symptoms and trait neuroticism emerges around the time of the menarche, reaches a peak in the main reproductive years (20-40) and declines after menopause (Jorm, 1987a, 1987b; Bebbington, 1998; Zunzunegui et al., 1998). While a growing body of evidence suggests that women of reproductive age are more susceptible to depression, this may be related to social factors; particularly their experience of life events and social stressors (Cox et al., 1989; Paykel et al., 1980). They often carry the triple burden of productive, reproductive and caring work. Biological menopause has also been proposed as a potential contributing factor in the development of depression in women (Eagles and Whalley, 1985). However, it was not consistently found to be associated with an increased risk of depression (Greene and Cook, 1980; Der and Bebbington, 1987), and hormonal differences remain inconclusive as a plausible

explanation (Paykel, 1991). Again, evidence suggests that, where depression does occur at the time of menopause, environmental factors play a more significant role in its etiology than menopause itself (Slater and Roth, 1969; Ballinger, 1975, 1976; Greene and Cook, 1980). More recent research suggests that the impact of biological and reproductive factors on women's mental health is strongly mediated and, in many cases disappears, when psychological factors are taken into account. For example, research on menopause has revealed that emotional well being in middle aged women is positively associated with their current general health status, psychosocial and lifestyle variables, but not with their menopausal status nor their hormone levels (Dennerstein et al., 1997).

1.9.2 Social Explanations

Gender influences the power and control men and women have over the determinants of their mental health, including their socioeconomic position, roles, rank and social status, access to resources and treatment in society. Studies in which, by design, social differences between men and women are minimized often show a reduced sex difference in mental health outcomes (Jenkins, 1985). This suggests that the excess of social stress experienced by women may be mediated through their typically low socio-economic status and restricted social roles (Jenkins, 1985). In the multi-country WHO study on Psychological Problems in Primary Care, when social role variables such as marital status, children, and occupational status were matched between men and women, the female excess in depression was reduced by 50% across all centers in the study (Maier et al., 1999).

Research on social rank suggests that humiliation, entrapment and helplessness inevitably lead to low self esteem and devaluation (Gilbert and Allan 1998). Depression is in turn strongly related to low self perception, submissive or non-assertive behavior and feelings of helplessness. Dyson and Moore (1983) report that the most desirable female traits for Indian women are to be sensitive to others needs, be submissive, docile, domestic and generous. The very same qualities that characterize low social rank, have been regarded as normal and desirable qualities of 'femininity' and encouraged if not enforced through socialization, 'tradition' and outright discrimination.

Gender is important in defining susceptibility and exposure to a number of mental health risks. Emerging evidence indicates that the impact of gender on mental health is compounded by its interrelationships with other social, structural determinants of mental health status, including education, income and employment. Women's health, including mental health is inextricably linked to their status in society. It benefits from equality, and suffers from discrimination, (WHO, 1998). As such, it is imperative to examine gender disadvantage in order to understand better the impact of gender on mental health.

1.9.3 Gender Disadvantage as a Possible Explanation

Comparing the gender specific prevalence of depression in Pakistan with other countries cited in Table 1.3. It is evident that the gender prevalence ratio is disproportionately higher in Pakistan. Cultural and regional variations in the size of the gender effect could not of course be explained in terms of biological differences between the genders, which one would expect to be relatively constant. These findings point towards a socially determined explanation both for the very high

prevalence of common mental disorder in Pakistan and for the unusually large difference in prevalence between the genders. We shall now examine the possibility that the high levels of gender disadvantage experienced by women in Pakistan may provide that socially determined explanation.

Gender disadvantage is the predisposition or tendency to think about or behave towards people differently on the basis of their sex. It is reflected in attitudes and behaviors based on stereotypical beliefs about the sexes, rather than an independent evaluation of each individual's abilities and experiences. If an outcome more often adversely affects one gender versus another, for whatever reason, that may be considered to be evidence of gender disadvantage.

In Pakistan, China, India, Bangladesh and parts of the Middle East there is a strong culturally ingrained preference for boys over girls. Son preference exists primarily in those societies characterized by gender inequalities with a particularly low status accorded to women. Gender disadvantage is therefore often established from birth, and has pervasive effects across the life course that may be relatively independent of socio-economic status. Most families want their first born to be a son, and prefer to have several sons and thereafter a daughter (Rahman and Da Vanzo, 1993; Renne, 1993; Makhlouf-Obermeyer, 1996; Stash 1996). Due to the financial and social burden that daughters are supposed to incur upon the family, parents, especially mothers, prefer to have sons since sons for them purport stable marriages and old age support (Pebley and Amin, 1991). Son preference is reflected also in discrimination against female children in household allocation of food and utilization of health services (Waldron, 1987). The female is often deprived of her basic right to education,

health and autonomy (Haq 2000). The starkest consequences of the son preference and female gender disadvantage is seen in the basic demographic indices of those countries most affected.

Demographers have documented that boys and girls are born in approximately equal proportions (about 105 male for every 100 female births), and females in all age groups are more likely to survive, and survive longer, than males under conditions of equal care(Sen, 2001; Klasen and Wink, 2003). Yet in India, the 1991 national census identified only 920 women for every 1,000 men in that country (down from 972 at the beginning of the century New York Times, 1991, p.A10). In China, information provided by the State Statistical Bureau reveals male-to-female sex ratios of 108 to 100 for 1981, 110 for 1986, and 113 for 1989 (Hull, 1990; WuDunn, 1993). Pakistan shares a large part of the burden of the 'missing women' in South Asia, with one of the most pronouncedly skewed female to male ratios of 91 women to a 100 men. Sen estimated 5.2 million missing women in Pakistan alone. However, even more extreme demographic data has been reported from the middle east with 84 women for every 100 men in Saudi Arabia, 67 per 100 men in Bahrain, and 48 per 100 men in United Arab Emirates (United Nations, 1991). Based on these and similar calculations, Amartya Sen (1999) contends that over 100 million women were "missing" worldwide. According to Klasen's estimate there has been a general increase in the missing women world wide (Klasen and Wink, 2002). This has been attributed partly to another radical change that has occurred over the past decade (Sen, 2001), the advent of sex selective techniques. It has been reported that in India, China, Hong Kong and South Korea, medical techniques developed to discover birth defects are increasingly being used to determine the sex of the child before birth, such that the

pregnancy can be ended if the foetus is female (UNFPA, 1998; Rajan, 1998). There is thus considerable data from South Asia substantiating gender discrimination in the perinatal and post-natal period from selective abortion of female fetuses, to prenatal selection of male embryos to the most extreme form of sex selection, female infanticide (Oberman, 2003). However, the large majority of missing women are accounted for by more subtle and prosaic forms of discriminatory practice in parenting and upbringing of young children. These processes will now be described with respect to Pakistan.

In Pakistan gender roles are exceptionally clearly defined and many researchers have described gender inequalities in the allocation of resources within these roles (Papanek, 1990). Son preference and daughter neglect prevails (Miller, 1984). Female gender disadvantage is established prior to birth. It then persists and accumulates in its effects across the life course.

1) Birth: classically the birth of a son is celebrated while the birth of a daughter is mourned. The particular strength of male gender preference in Pakistan is evidenced by the female male population ratio, which, for Pakistan (91/100) is even less than that for India (93/100), China (94/100) or Bangladesh 94/100) (Sen, 1999).

2) Early life: Much of this deprivation may be categorized under the general heading of impaired or inadequate care. For example, in Pakistan medical care is sought for children more frequently than for women, and among children more for sons than daughters; the differences, however between the amount spent per illness episode for male children as compared to female children is striking, with almost four times the amount of rupees

expended for illnesses of male children as compared to females (Hunte and Sultana, 1992). This is in accord with other findings (Ahmad, 1979) who found that the proportion of male children with critical illness being treated at hospital was double that for female children. Just over the border in Indian Punjab, in the Ludhiana study (Pebley and Amin, 1991) it was shown that boys received preferential treatment in almost all aspects of childcare that were measured. Girls were breastfed on average for a shorter time than boys, girls received less food, especially of high prestige food such as fats and milk, and that boys received medical attention earlier. Girls with older sisters had 5.8 times the excess risk of dying compared to girls without older sisters (Muhuri and Preston, 1991).

3) Later childhood: The relative neglect or impaired care extended towards girls extends into later childhood and adolescence. In Pakistan, only 25% of women, compared with 49% of men have completed primary education. For uneducated girls, 31% of parents 'did not agree' with the child attending school, compared with 7% of parents of uneducated boys. In urban Punjab, literacy rates vary from 41% to 87% across fifths of household SES. However, in every stratum the prevalence of literacy for women is only around two-thirds that for men.

4) Adulthood: One of the reasons for undervaluation of daughters is the cost of marriage incurred by her family, with little expectation of recompense (Eglar, 1965). The family usually arranges the marriage, with little involvement from the bride. They aim for early marriage; the chances of a 'good match' are held to be better for younger women with fair

complexions (Khan and Reza, 1998). Women constitute only 28% of the Pakistani labour force (World Bank, 1998). The female mortality rate during peak child bearing years (20-29 years) is twice as high as that for men in the same age group (Tinker, 1998).

In the previous review of established aetiology of common mental disorder, lack of parental warmth and care, low education and adverse marital circumstances were all highlighted as consistent and robust risk factors. Given the salience of these development and maturational factors to the aetiology of CMD in diverse settings, and as markers of female gender disadvantage in Pakistan, is it possible that gender disadvantage itself might be an important 'upstream' risk factor for CMD in the specific Pakistan cultural context.

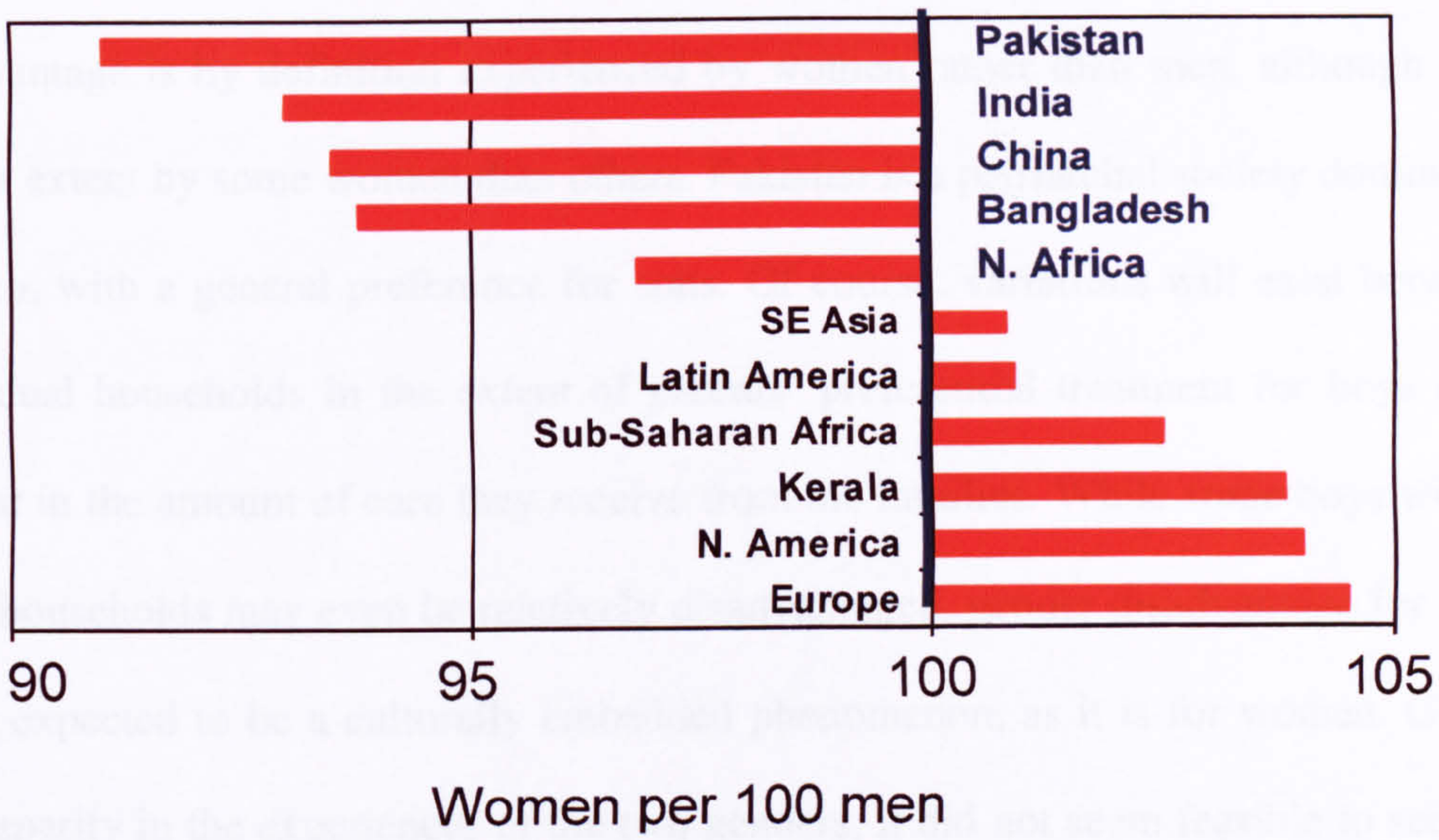
The research evidence clearly supports the notion that females are relatively disadvantaged, in Pakistan, as compared with males. However, none of the studies cited above considered the possibility that women in Pakistan might have different experiences of gender disadvantage, having been exposed to a greater or lesser degree. Rather, the implicit assumption in the comparison of outcomes between males and females is that girls generally were disadvantaged.

The theoretical model underpinning our research is that:

1) The disadvantages and biases described above are indeed experienced by Pakistani women to varying degrees.

2) Among women, the extent of the exposure to gender disadvantage may be an important determinant of risk for common mental disorder.

Figure 1.1: The 100 million 'Missing women' Female/ male ratios in selected populations



1.10 Hypothetical Model for Etiology of CMD to be Tested in Pakistan.

In Pakistan, to the extent that gender differences in risk for CMD have been addressed, it has been only with reference to the socio-economic status (SES) of women as the putative intervening variable (Husain et al., 2000). However, in Pakistan, as in China, India, Bangladesh and parts of the Middle East, as we have seen, gender disadvantage is established from birth and has pervasive effects across

the life course that may be relatively independent of SES. Thus, an unwanted daughter, in comparison with a wanted daughter or a son, may bond poorly with her parents, may be neglected, and be accorded limited education. A daughter who is little valued in her family of origin is then likely to carry this disadvantage with her into her marriage, having been married off early and with little care to choice of a suitable partner, making her vulnerable to neglect or abuse.

Elements of this model are clearly testable as described in the hypothesis below. I have chosen to test these hypotheses among women only, as female gender disadvantage is by definition experienced by women rather than men, although to a greater extent by some women than others. Pakistan is a patriarchal society dominated by men, with a general preference for sons. Of course, variations will exist between individual households in the extent of parents' preferential treatment for boys over girls or in the amount of care they receive from the families. While some boys within some households may even be relatively disadvantaged, gender disadvantage for men is not expected to be a culturally embedded phenomenon, as it is for women. Given the disparity in the experiences of the two genders, it did not seem feasible to seek to measure gender disadvantage in the same way across both genders and then to assess the extent to which gender disadvantage might 'explain' the previously reported excess of common mental disorder among women. Thus, while the extensive influence of female gender disadvantage may explain the large difference in prevalence between men and women in Pakistan, this notion, the starting point for my research is not specifically testable using the design that I have selected. One approach that may be worth developing further in the future would be to focus instead upon some markers of likely consequences of gender disadvantage, for example,

parental care and level of education, which might be measured equivalently in women and men, and could be hypothesized to mediate some of the association between gender and common mental disorder in Pakistan.

1.10.1 Outline of Elements

The main elements of the model are:

1) The concept of GD starts from birth and has a pervasive influence across the life course – proxy indicators can be identified, which refer to different stages in the early life course; birth order, care and overprotection, education, age at marriage, marital satisfaction – these should be associated with each other, and each should be associated with subjective summary indicators of GD.
2) GD is relatively independent of SES – some of the above factors may be associated with SES, but not inextricably, and not perhaps all of them
3) Among women, GD indicators are associated with CMD after adjusting for SES.

1.10.2 Justification

Our model is supported by western studies indicating that aspects of the parent-child relationship dispose the child to mental disorder in adulthood (Parker, 1983, 1993). Lack of care and an excess of parental control have both been consistently associated with CMD. Marital satisfaction has not previously been evaluated in Pakistan. Divorce is almost non-existent at 0.3 per 1000 population (Khan and Reza, 1998), but this should not be taken to reflect the health of the institution of marriage. Indeed the stigmatization of divorce may simply serve to entrench marital dissatisfaction.

2 Aims and Hypotheses

2.1 Aims

I proposed to study Common Mental Disorder among young women in two geographically defined sub-populations in Rawalpindi/ Islamabad characterized by contrasting socio-economic circumstances. I investigated the role of four related indicators of female gender disadvantage, operating to some extent at different stages in child and adolescent development;

1) absence of a male sibling at the time of birth (as a proxy for male preference).
2) impaired parental bonding (also a proxy for male child preference).
3) low educational attainment and
4) adverse marital circumstances

Household socio-economic status is well established as a risk factor for CMD, and may confound, or perhaps modify the effect of gender disadvantage, hence the stratified sampling strategy. My study should advance current knowledge by a) clarifying the extent of the risk for CMD in young women in Pakistan, b) addressing specific aetiological hypotheses, relevant to the literature on gender disadvantage and with potential to explain some of the excess risk experienced by women.

2.2 Hypothesis

The main study aimed to study three hypotheses:

2.2.1 Specific Hypothesis

1) Having adjusted for the effect of socio-economic status, and other potential confounding variables, women in the lowest fifth of the sample for the care subscale of the Parental Bonding interview will have 1.5 times the risk for Common Mental Disorder as defined by Self Reporting Questionnaire scale scores of 8 or greater.
2) The following indicators of gender disadvantage across the early life course: lacking an older brother, lower care subscale scores and higher overprotection scores on the Parental Bonding Inventory (PBI), the perception that parents would have preferred a boy, having less education, earlier age at marriage and lower marital satisfaction; will each be associated with common mental disorder in young Pakistani women
3) Low socioeconomic status will be independently associated with less education and earlier age at marriage, but not with other markers of gender disadvantage.

3 Methods

Preamble - Pilot Study

Before finalizing the method for the main study, we carried out an extensive pilot. The aims, methods and results of the pilot study are presented briefly here in order to illustrate the way that these informed the design of the main study.

i) Pilot Study – Aims

The aims of the pilot study were:

1. To test the feasibility of the door knocking process of enumerating female participants from different socio-economic strata in Pakistan to participate in a psychologically sensitive interview, the viability of interviewing them in private and the acceptable length of the interview.
2. To assess the average number of eligible persons per household and their likely response rate so as to establish the number of households needed to be door knocked to yield the required sample size for the main study.
3. Study the construct of marital satisfaction in Pakistan, and test the applicability of marital satisfaction scales developed in the West for use in Pakistan. These were the 35 item (9 point scale) Marital Satisfaction Scale (MSS) (Blum and Mehrabian, 1999) and the three item (five point scale) Kansas Marital Satisfaction Scale (KMSS) (Calahan, 1997). For both MSS and KMSS we also trialled a collapsed three point scale.
4. To examine the face validity of the 25 items of Parental Bonding Interview

(PBI) (Parker, 1979), as measures of care and overprotection. To assess the concurrent validity of the PBI against the Clinical Interview Schedule-Revised (CIS-R) score (Lewis et al., 1992), as a measure of psychiatric morbidity, and against the Marital Satisfaction scale in the light of previously reported associations between low care on the PBI and poor marital satisfaction (Truant et al., 1987).

ii) Pilot Study - Method

All instruments were translated into Urdu, and then back translated into English for comparison with the original version. The aim was to achieve conceptual, operational, and semantic equivalence. The original English versions of the instruments were given to five bilingual advisors from different walks of life; academics, students, non-governmental organization workers and housewives. They were asked to translate the scales into Urdu to capture the literal as well as cultural nuance of the items. A committee of two psychologists and a psychiatrist examined these Urdu drafts. The resulting consensus version was shown to a linguist for her input. The Urdu version was then given to four individuals from different walks of life with no connection to psychology or psychiatry, who were asked to back translate them to English. The translations were carefully examined by the committee and found to be satisfactory. Each questionnaire (CIS-R, PBI and MSS) was pre-tested for face validity. Seven local women were asked if the constituent items were relevant to the trait being assessed (mental health, parental bonding and marital satisfaction respectively), and if, in their opinion, the items were culturally suitable.

Enumeration was carried out in streets in one higher socio-economic status district and one lower socio-economic status (SES) district in each of the twin cities. Streets were selected purposively, and then every home in the street was enumerated. Women aged between twenty and thirty-five years and residing in one of the two catchment areas were eligible to participate. Those women who due to physical or psychological impairment were unable to partake in the study, were excluded. The intention was to recruit 80 women, 40 from high SES and 40 from the low SES households. However, because all eligible women from a household were interviewed, in the event the total number of participants was 86. Two interviewers conducted the interviews. The main investigator (FQ) and an employee of a local non-governmental organization, who was trained to administer the questionnaires. The studies were fully explained and all participants gave written informed consent.

iii) Pilot Study Results

Door Knocking and Enumeration

The findings of the pilot revealed that enumeration by door knocking was entirely feasible in spite of the cultural milieu in Pakistan. Furthermore, with tact it was possible in most every case to ensure interviewing the female participant in private without interference from her family. In instances where male members or elders of the household demonstrated concern about the interview, their anxiety was allayed by a brief description of the study. Only one household out of 105 approached refused to take part in the enumeration. Eligible women were identified in 77 out of the 105 households door-knocked. The response rate, with informed consent, was 100%; all

86 women agreed to participate. Their mean age was 26 years, and 29 (34%) were married.

The Prevalence of Common Mental Disorder

In the pilot study, we defined common mental disorder as a score of 12 or more on the overall psychiatric morbidity scale of the CIS-R. Fifty out of the 86 women met this criterion, a prevalence of 58%. The prevalence of CMD was higher in low SES districts (66%) than in higher SES districts (53%).

Marital Satisfaction

The construct of marital satisfaction has not previously been explored in Pakistan. In this pilot study using both a qualitative as well as quantitative approach, we examined the construct of marital satisfaction and tested the applicability of marital satisfaction scales developed in the West for use in Pakistan.

In-depth interviews and open-ended discussions were conducted, recorded on tape and transcribed. The primary aim of the qualitative section was to establish whether the construct of marital satisfaction was applicable in Pakistan. What entails marital satisfaction for a young Pakistani woman? Is there a need to assess it and if so is it appropriate to measure it through western scales? We also asked the women to state their preference of the two scales used.

Our results indicate that contrary to cultural beliefs regarding marriage, most women expressed the need to be satisfied within marriage. Regardless, of the socioeconomic

status there was an overwhelming consensus in that women desired 'love' and 'respect', women from higher SES households also expressed a desire for friendship and companionship. However, most women saw marriage as a familial social obligation in which the woman is to adjust because the man seldom does. For fear of hurting or annoying their parents most women refrain from expressing their opinion in the choice of a male partner or unhappiness in their marriage. It does appear from our findings that the construct of marital satisfaction is a viable concept for study and research in Pakistan.

There was a mixed response regarding preference for either scale. Generally however, women preferred the MSS with the collapsed three point scale instead of the original nine point scale. Question items addressing intimacy of relationship were considered by some to be unbefitting for Pakistani culture. However, in the quantitative section we included the scale in its entirety and the results of the item total correlation did not reflect them to be less correlated. Interestingly, we did not notice questions directed towards sexual intimacy provoke embarrassment or discomfort in the women.

In our pilot study somewhat contrary to our expectations, only 38% of married women professed themselves to be 'very satisfied' with their marriage, their relationship with their partner, and their spouse as a partner. KMSS correlated with the longer MSS at 0.89. Cronbach's alpha was 0.91. The shorter MSS also showed no evidence of ceiling effects. Cronbach's alpha was 0.96. Even in our small sample, KMSS and short MSS scores, indicating lower marital satisfaction, were associated with CMD to a striking and statistically significant degree.

Parental Bonding Interview

For the most part, the translators felt that the questionnaires were acceptable and face valid. However, it was pointed out that for some PBI items, the loading on the overprotection scale might not hold the intended negative connotation in Pakistan. These items were: item: (10) "Invaded my privacy", (13) "Tended to baby me", (23) "Was overprotective of me" Conversely, other positively framed items from the same subscale might be negatively perceived; (21) "Gave me as much freedom as I wanted" (22) "Let me go out as much as I wanted, (25) Let me dress in any way I pleased. None of these items were excluded in the pilot study in order to assess empirically their relationship to other items in the scale.

PBI- Descriptive Data and Scaling Properties

We found no substantial or statistically significant association between PBI subscales and marital status, age, education, or social class. The scores for PBI ranged from 12-36 for the care dimension and 15-38 for overprotection. The care subscale was slightly negatively skewed while the data for over protection was normally distributed. The mean for the care subscale was 26.0 (standard deviation [SD] 6.6), and mean for overprotection was 25.0 (SD 5.0). The item total correlations for the 12 care subscale items ranged from 0.26 to 0.72, with a mean of 0.46. Cronbach's alpha for the care subscale was 0.91. The same indices for the 13 overprotection subscale items suggested weaker internal consistency. The item total correlations ranged from -0.10 to 0.64 with a mean of 0.24. Cronbach's alpha for the overprotection subscale was 0.80. Three overprotection scale items had a corrected item total correlation of less than 0.3, (13) "Tended to baby me", (20) "Felt I could not look after myself if she was not around", (25) "Lets me dress in any way I please".

PBI- Factor Analysis

A scree plot could be taken to support either a two-factor or three-factor solution (Figure 3.1). The two-factor solution explained 43.8% of the variance, and item loadings were consistent with Parker's two-factor solution. The care items, all loaded on factor 1 (range of loadings 0.59 to 0.81), while all the overprotection items loaded on factor 2 (range of loadings 0.21 to 0.68). The three-factor solution explained 50.2 % of the variance. The first factor was the care factor (factor 1) from the two-factor solution. The second and third factors divided the overprotection subscale items into two, to some extent distinct components.

Overprotection Sub-scales

We further calculated the alpha for the two sub-dimensions of the overprotection scale, we refer to them by the categories suggested by Murphy et al., (1997): "Encouragement of Behavioral freedom" and "Denial of Psychological autonomy". For our study items: 3, 9, 10, 15, 21, 22, 25 were included under "encouragement of behavioral freedom" and items: 8, 13, 19, 20, 23 were included under "denial of psychological autonomy. Item7 loaded on both dimensions: 0.46 and 0.50 respectively, therefore it was not incorporated in subsequent subscale analyses. The Cronbach's alpha scores were 0.60 for denial of psychological autonomy and 0.80 for encouragement of behavioral freedom. The correlation between these two subscales was 0.36.

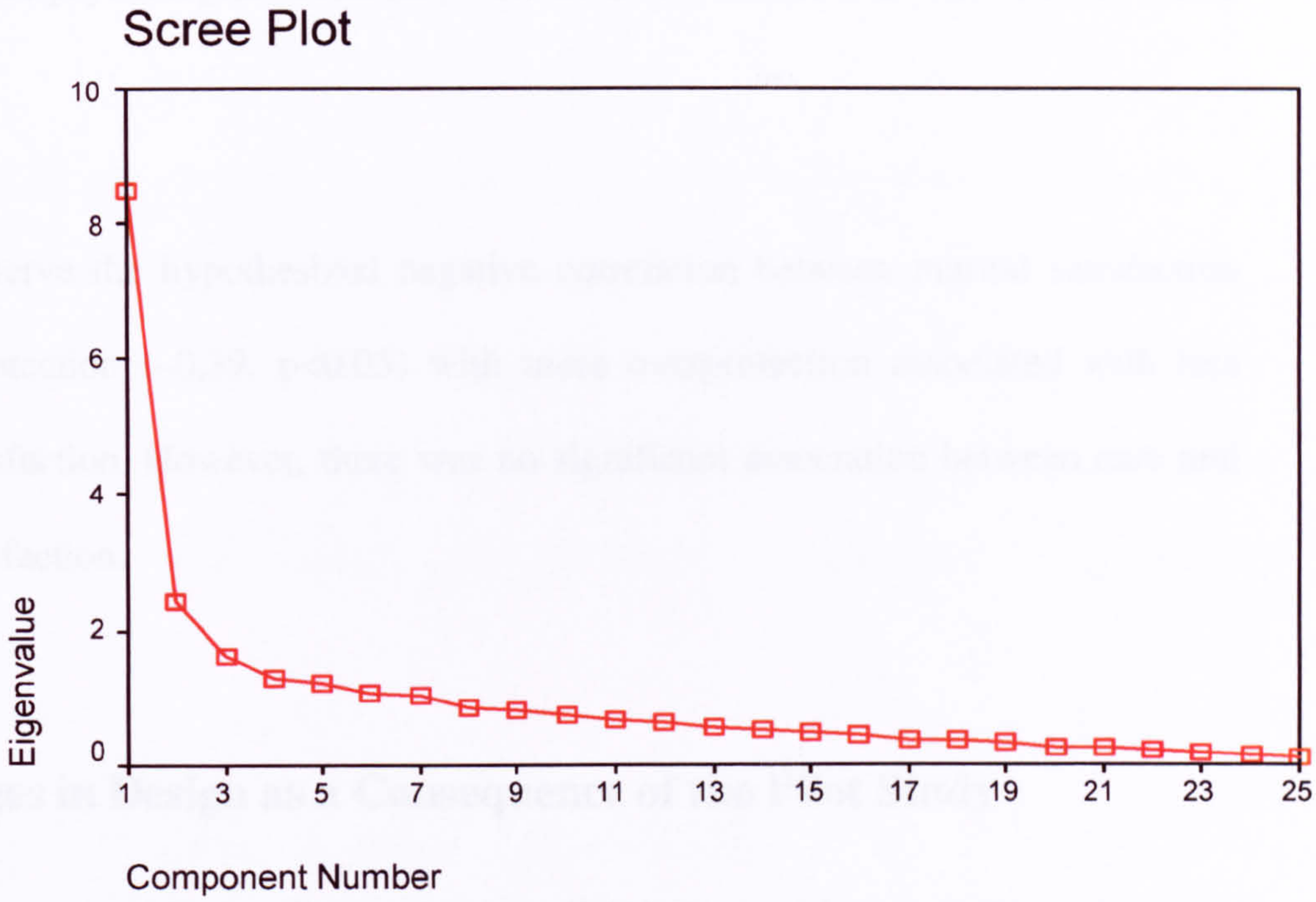
Table 3.1: Principal component analysis for Parental Bonding Instrument. Item loadings for two and three-factor solutions

	Three-factor solution			Two-factor solution	
Items	Factor1	Factor2	Factor3	Factor 1	Factor 2
Care					
1. Spoke to me with a warm and friendly voice	0.68	-0.34	0.16	0.78	-0.06
2. Did not help me as much as I needed	0.68	-0.05	-0.01	0.63	0.01
4. Seemed emotionally cold to me	0.75	-0.12	0.09	0.74	0.06
5. Appeared to understand my problems	0.73	-0.31	-0.19	0.75	-0.27
6. Was affectionate to me	0.74	-0.30	0.12	0.81	-0.00
11. Enjoyed talking things over	0.57	-0.17	-0.11	0.57	-0.14
12. Frequently smiled at me	0.60	-0.40	0.20	0.72	-0.00
14. Did not seem to understand what I needed	0.60	-0.21	-0.23	0.60	-0.26
16. Made me feel I wasn't wanted	0.58	-0.30	0.08	0.67	-0.05
17. Could make me feel better when I was upset	0.70	-0.36	-0.09	0.75	-0.22
18. Did not talk with me very much	0.70	-0.04	-0.21	0.62	-0.14
24. Did not praise me	0.58	-0.37	0.15	0.70	-0.03
Overprotection					
3. Let me do things I liked doing	-0.30	0.55	0.05	-0.47	0.33
7. Liked me to make my own decisions	-0.37	0.46	0.50	-0.42	0.63
8. Did not want me to grow up	-0.50	-0.12	0.50	-0.32	0.30
9. Tried to control everything I did	-0.24	0.50	0.15	-0.38	0.38
10. Invaded my privacy	-0.27	0.59	0.09	-0.46	0.38
13. Tended to baby me	-0.08	-0.06	0.67	0.21	0.52
15. Let me decide things for myself	-0.41	0.51	-0.30	-0.53	0.50
19. Tried to make me dependent on her/him	-0.21	0.34	0.57	-0.23	0.65
20. Felt I could not look after myself if she/he was not around	0.03	0.04	0.60	0.11	0.52
21. Gave me as much freedom as I wanted	-0.26	0.82	0.12	-0.53	0.53
22. Let me go out as often as I wanted	-0.10	0.59	0.12	-0.03	0.42
23. Was overprotective of me	0.24	0.40	0.54	0.16	0.68
25. Let me dress in any way I please	-0.07	0.58	-0.12	0.31	0.21

Table 3.2: Factor Models of the PBI

Study	Name Given	Items From PBI
	Factor 1	
Cubis et al	Protection- Personal Domain	8,10,13,19,23
Murphy et al	Denial of Psychological Autonomy	8,9,13,19,20,23
Current study		7,8, 13, 19, 20,23
Factor 2		
Cubis et al	Protection- Social Domain	3,7,9,15,20,21,22,25
Murphy et al	Encouragement of Behavioral Freedom	3,7,15,21,22,25
Current study		3,7, 9, 10, 15, 21, 22, 25

Figure 3.1: Scree plot of Principal Components Analysis for Parental Bonding Instrument



PBI Concurrent Validity

We defined common mental disorder as a score of 12 or more on the overall psychiatric morbidity scale of the CIS-R. Upon examining the association between PBI care and common mental disorder the mean for cases was 23.0 (SD 6.2) and for non-cases was 29.3 (SD 5.1). The mean difference was 6.5 with 95% confidence intervals of 4.0 to 9.0, t =5.1, $p<0.001$. In the association between PBI overprotection and CMD the mean for cases was 28.0 (SD 5.6) and for non-cases was 22.4 (SD 3.5). The mean difference was 5.1, 95% CI 3.1 to 7.1, t=5.1, $p<0.001$. The Pearson correlation coefficient for the linear association between CIS-R score and PBI care scale was –0.66 and between CIS-R score and the PBI overprotection scale, 0.57. We also examined the association between the two overprotection subscales identified in the three factor solution, and CMD. For "encouragement of behavioral freedom" we

found a mean difference of 2.8 between CMD cases and non-cases, 95% CI 1.3 to 4.1. For "denial of psychological autonomy" the mean difference was 1.6, 95% CI 0.6 to 2.6.

We did observe the hypothesized negative correlation between marital satisfaction and overprotection (–0.39, $p<0.05$) with more overprotection associated with less marital satisfaction. However, there was no significant association between care and marital satisfaction.

iv) Changes in Design as a Consequence of the Pilot Study

The instruments used in the pilot study were slightly revised for use in the main study, based on our experience.

1) We changed the main outcome measure from the Clinical Interview Schedule-Revised to the SRQ-20. While these two measures assess the same general domain (psychological morbidity) and might be expected to correlate closely, this certainly will have led to some loss of precision in the assessment of the outcome. CIS-R provides ICD-10 diagnoses of non-psychotic mental disorders in addition to a psychological morbidity scale score with a validated cutpoint. The SRQ-20 provides only the latter. Against this, the SRQ-20 has been used previously in epidemiological research in Pakistan, and was specifically developed by the WHO with cross-cultural applications in mind. The length of the interview was an over-riding concern; women could not spare the 80 minutes required in the pilot study, a substantial proportion of which was

accounted for by the CIS-R. The length of the interview in the main study was reduced to around 45 minutes.

2) We used the shorter 14 item Marital Satisfaction Scale (Blum and Mehrabian, 1999) and the 16 item Parental Bonding Interview (Parker, 1979) instead of the original longer versions. Doing so usefully eliminated some of the items identified as possibly problematic in the pilot study. The short forms were convincingly demonstrated in the pilot study to be equivalent to the longer forms.

I shall now go on to describe the design of the main study.

3.1 Design

A population-based cross-sectional catchment area survey design for this study.

3.2 Settings for the Research

The study catchment areas were located in the twin cities of Rawalpindi and Islamabad in the northern part of Pakistan. Though referred to as the twin cities they have their own distinct characteristics.

Islamabad is the capital of Pakistan and comes under federal government. It was created as a new administrative district in Pakistan to be the home of government, the supreme court, and the diplomatic corps; it is therefore not surprising that it offers a modern ambiance with a prominent western influence. Islamabad has grown rapidly since construction began in 1961, the current population of the city is 102500 approximately, with a population density of 888.8 per square kilometer, and an average household size of 6.2, with 2.1 persons per room. Islamabad proper comprises of 220 square kilometers approximately but the total specified area is 3626 square kilometers. It is 14 kilometers north east of Rawalpindi on the north eastern fringe of the Potohar plateau of the province of Punjab. It boasts a master-planned rectangular street pattern set against the back drop of Margala Hills. The plan for Islamabad was designed by a Greek firm Doxiadis. It is triangular in shape, based on grid system, with its apex towards the Margalla Hills. The city is divided into eight basic zones administrative, diplomatic enclave, residential areas, educational sectors, industrial sectors, commercial areas and green belts. Each sector has its own shopping area and public park.

Rawalpindi tehsil, the other main town from which the sample was drawn is part of the larger Rawalpindi district, which in turn is in the north of the province of Punjab. The planners envisaged Islamabad eventually absorbing Rawalpindi entirely. However, Rawalpindi still maintains its individual identity rather different from Islamabad. Rawalpindi tehsil is the district headquarters. The district itself is spread over 5286 kilometers, where the total population is 33,63,911 with a population density of 636 per square kilometer, the average household size is 6.4 with 1.9 persons per room. It comprises of six tehsils; 1) Rawalpindi, 2) Kahuta, 3) Muree, 4) Gujar Khan, 5) Taxila and 6) Kotli Sattain.

Rawalpindi (tehsil) is further divided into 10 wards by the cantonment board. The division is based on geographical proximity and includes both high and low socioeconomic areas. There is considerable variation in the size of the houses, and the streets are not as well marked as in Islamabad. City blocks are small and growth less controlled than in the newer neighbor. Rawalpindi, offers a more traditional environment. All sorts of modes of transport are to be seen including buggies, cycles, trucks and donkey carts. Women are seen wearing veils and chadors. It is an older city where families have lived for generations and people know each other.

3.2.1 Selection of Catchment Areas

Household socio-economic status is well established as a risk factor for CMD, and may confound, or perhaps modify the effect of gender disadvantage. We therefore sought to ensure variance in socio-economic status by selecting higher and lower socio-economic status catchment areas from each of the twin cities. The catchment areas were chosen purposively rather than at random from among the subdivisions of

cantonment and municipal cantonment ("wards") of Rawalpindi and sector divisions of Islamabad on the basis of their accessibility and the socio-economic status (SES) of their residents. The low and high SES catchment areas were identified on the basis of the size of residential plots in that area and average household income as reported in the Provincial Census Report of Punjab 1998 (for Rawalpindi), and the Federal Bureau of Statistics (for Islamabad). Commercial communities were excluded because of the anticipated difficulties of access into homes and identifying participants.

The four catchment areas were:

High SES Rawalpindi	Westridge ward (10)
Low SES Rawalpindi	Tenchbhata ward (6)
High SES Islamabad	Sector division F/7
Low SES Islamabad	Sector division G/6

3.2.2 Identification of Households

Enumeration of each catchment area was carried out in ascending order of streets, and every door was knocked to identify eligible persons. In Islamabad the streets followed a grid pattern and were easier to follow, whereas in Rawalpindi the streets did not have systematic numbering, for example the street adjacent to street one could be street twelve. Enumeration was continued systematically until the target of 125 eligible persons for each catchment area was recruited. In the low SES Islamabad area, following negotiation with community leaders and in the interest of good community relations, the whole district was door-knocked and all eligible persons interviewed, resulting in a larger sample of 150 women in that district

3.2.3 Selection of Eligible Residents within Households

All women aged 20-35 years, married or single, were eligible to be included in the study. There were no exclusion criteria other than lack of consent to participate. Confidentiality and anonymity of participants was assured. Participation was voluntary and based on informed signed consent. Participants were provided with a list of institutions/ NGOs where they could go for specialized help.

In the event that there was more than one eligible resident in a given household, we interviewed all of them. While this will have led to some clustering, reducing somewhat the effective sample size, this decision was based on the findings of the pilot study. It was noted that if one participant were to be selected (albeit at random) other family members became anxious and suspicious about selection criteria. Cooperation at household level was facilitated when all younger women were recruited.

In most instances there was only one eligible women in a household. In a joint family system there was a possibility of a daughter and a daughter in law either residing in the same house sharing the family income or in a portion of the house with independent spending income. In the first scenario they were included in the same household but if they independently managed a portion of the house they were treated as separate household participant. This occurred only in the low SES Rawalpindi.

3.3 Sample Size Calculation

The sample size was estimated by the power calculations based on the hypothesis that higher prevalence ratio for CMD would be found among women scoring low on the PBI Care subscale which is one of the indicators for gender disadvantage. 250 participants in each SES stratum would provide 80% power at 95% confidence to detect effects (prevalence ratios) of 1.5 or greater for risks concentrated in 20% of the exposure distribution (e.g lowest fifth of PBI care dimension vs. top four fifths), or prevalence ratios of 1.3 or greater when data from the two strata (low SES and high SES) are combined together, where appropriate. No provision was made for non-response, given the very high participation rates recorded in our pilot study (see pilot study results).

Recent censuses indicated that women between 20-35 years age group constituted locally 22% of all women, and 11% of the whole population; approximately 70% were expected to be married (Federal Bureau of Statistics, GOP, 2000). The target sample of 500 (250 in each stratum, 125 in each catchment area) would require that each catchment area should have a total population of around 1250. Given that the average household size in urban Punjab is 6.7, this would imply an area with 187 households. 125 eligible women from 187 households (0.67 eligible women per enumerated household) is actually a more conservative estimate than that suggested by our pilot study (86 eligible women identified from 105 households or 0.82 eligible women per enumerated household). The catchment areas identified above were selected with these considerations in mind.

3.4 Protocol for Training Interviewers

The field research team consisted of four research assistants and myself the main researcher. The four assistants were recruited privately. They were bilingual in Urdu and English, had a Masters degree in behavioral sciences with a background in Psychology, and some previous experience with field-work. The training of the four research assistants took one month. The first phase involved role-play interviews in order to acquaint them with the questionnaires. They were then asked to conduct 30 pilot interviews to:

a) familiarize themselves with the questionnaires,

b) become fluent with the items,

c) appropriately approach the participants, and

d) professionally introduce themselves and their work to the participants.

The purpose of this exercise was to increase the possibility of accessing households and conduct the interviews efficiently.

In order to ensure inter-rater reliability the method of observer co-ratings was applied. During the pilot work one research assistant interviewed the participant and scored the questionnaires while the other research assistant independently scored the questionnaires. Both questionnaires were then compared for any discrepancies. In this manner 34 interviews were co-rated until good levels of agreement were achieved. The data collection commenced once the main researcher was comfortable with the training of the assistants and the research assistants felt confident. Approximately 129 interviews were personally supervised by the main researcher.

3.5 Field-work Procedures

A Pakistani women's NGO, ROZAN was our local base and sponsor for the research, thus providing a local reference to authenticate the study. Prominent women in the local community were identified in the catchment areas to facilitate easy access to households. Research assistants approached households with their national identification card as well as the university identification card. With due consideration for social norms and the safety of the female interviewers the research assistants worked in pairs. They were provided with a mobile phone and were escorted by a driver who was to wait vigilantly outside the households approached by the team. Consent was sought at the point of enumeration, and interviews conducted immediately or after a delay for consideration, as appropriate. If two eligible women were identified the team would split and conduct two interviews simultaneously. In most cases the research team was able to conduct the interviews on a one to one basis with the participants in the privacy of their homes. In a few cases participants preferred coming to their friends/neighbors house for the interview. (see pilot study results (iii) section).

Since we replaced the CIS-R with the 20-item version of the SRQ the interview time was substantially reduced to approximately 45-50 minutes from 80 minutes in the pilot study. In order to maintain uniformity and ensure consistency throughout the data collection we decided to present the array of questions in a fixed pattern. The battery of questionnaires included in the study were arranged sequentially, after the initial demographic items we introduced the gender disadvantage questions (e.g. Care/ Overprotection (PBI), the two summary measures and MSS), followed by questions pertaining to potential confounders and finally we elicited responses for the main

outcome measure (SRQ). The data collection took nine months to complete. Interviews were administered from paper questionnaires and answers coded onto data entry sheets since computer use might have been considered intimidating by some of the participants, especially in the low SES areas.

3.6 Quality Control

In order to ensure quality control the main researcher sat in on random interviews to supervise and check the procedure. This was encouraging for the assistants, and reassuring for the participants and their families. In addition, the main researcher herself completed slightly more than one fifth of the interviews in the main field-work phase. The team met every week to double check the completed questionnaires and deal with any missing information. The research workers entered data into SPSS. I then independently checked all computer data entries.

3.7 Measures

3.7.1 Mental Health (Main Outcome Measure)

The main outcome measure to assess common mental disorder was the Self Rating Questionnaire (SRQ-20) it is a 20 item self-report scale based measure of psychiatric morbidity developed and validated cross-culturally as a psychiatric screening tool to suit primary health care settings in developing countries (Harding et al., 1980). It has been translated in Urdu and had been previously used, and validated in four studies in Pakistan (see section 1.3.3.2.4.1 for details). Case criteria for the study was set at ≥ 8 cutpoint on SRQ-20 (SRQ psychometric properties 1.3.3.2.4.1).

3.7.2 Gender Disadvantage (Hypothesized Risk Factor)

3.7.2.1 Early Childhood

i) Birth order. Ages and genders of the entire sibship were elicited to construct the following variable; participant – has older brother/ has younger brother born within 3 years/ has younger brother born after three years/ is an only child/ has no brother (oldest daughter)/ has no brother (2^{nd} or subsequent daughter). This was envisaged as an ordered categorical variable, likely to act as a proxy assessment of the likelihood of the girl experiencing gender disadvantage in childhood. The a priori hierarchical linear association hypothesized was that a daughter born after a male child would be at least risk of GD, with those who had a younger brother within 3 years being slightly more at risk followed by women who had a younger brother below three years. Arguably, the gender disadvantage would increase incrementally for daughters who were an only child to those who were the eldest without a brother to the category most at risk 2^{nd} or 3^{rd} daughter in the absence of a male child.

ii) Parental Bonding Instrument (PBI) (Parker, 1979) assesses the adequacy of a child's bonding with parents in early life in two dimensions; care and overprotection. Scale scores ascertained in adulthood are reputed to reflect childhood experience (Parker, 1989), and to be relatively little colored by current affective status (Duggan et al., 1998) (see section, 5.1.4.2 for further details) for further information. Since the gender disadvantage is expected to begin at birth it should be reflected in both the care and

overprotection scores. We used the shorter 16 item PBI version recommended by Kendler (1996). This eliminated those items identified as problematic in the pilot study (see pilot study results (PBI) section).

Perceived gender preference of parents. Participants were asked;

1) Did you ever feel that your parents would have preferred you to have been a boy?
2) Did you ever feel that your parents favored your brothers or other male relatives over you?

I wanted to elicit information on the perception of gender disadvantage, as an overview of the risk indicators along the hypothesized causal pathway (section 2.2.1). The two questions were drafted aiming for face validity - items that would unequivocally encapsulate the latent trait of gender disadvantage as experienced by the indigenous population. A parental preference for boys over girls, and a preferential allocation of care and family resources towards boys are the two most commonly cited elements of gender disadvantage in countries where the bias is culturally embedded. Ideally, the questions should have been developed from qualitative research, and piloted more extensively prior to inclusion in the study. In practice, the questions were easily comprehended by Pakistani women and deemed appropriate to elicit their personal experiences of disadvantage.

3.7.2.2 Adolescence (Educational Attainment)

i) Literacy, ii) years of education, iii) school and college qualifications

Besides these basic questions we also enquired whether or not participants were allowed to pursue education if they desired and whether or not they were allowed to study the subjects of their choice.

3.7.2.3 Late Adolescence/ Early Adulthood

i) Marital status: (not married, engaged to be married/ married/ separated or divorced).

For married women –

ii) Circumstances of marriage: age at marriage, marriage arranged yes/no, participant would have preferred to make their own choice yes/ no.

iii) Child-bearing: parity, interval between marriage and first child, gender of child/ren, fertility problems yes/ no, number of abortions.

iv) Marital satisfaction: For the main study we used the shorter 14 item Marital Satisfaction Scale (Blum and Mehrabian, 1999) with a modified three point item response scale. This version excluded most of the problem items identified in the pilot study. It also helped shorten the length of the interview which was a concern for the participants. More detailed explanation is given in the pilot section.

3.7.3 Socio-Demographic Indicators

1) Age of participant

2) Current living arrangements; joint, partly joint, not joint (nuclear)

3.7.4 Socio-economic Status

To ensure adequate variance, sampling was stratified into two sets of two catchment areas characterized by differing prevailing economic circumstances. Additionally, for each participant, we also assessed current SES, and SES of the family of origin as follows:

i) household income, fathers income, husbands income (for married women),

ii) parent's occupation,

iii) husband's occupation,

iv) overcrowding index,

v) household car ownership,

vi) motorcycle / cycle ownership,

vii) house privately owned, government accommodation or rented accommodation,

viii) number of bedrooms, and number of bathrooms in the house (3 or more versus less than three),

ix) Visit abroad,

x) utility/ luxury items: TV/ VCR / computer/ AC / Car / Domestic help.

3.7.5 Other Potential Confounders

3.7.5.1 Health

The 12 item fully structured interviewer–administered version of The World Health Organisation Disability Assessment Schedule (WHODAS-II – http:/www.who.int/icidh/whodas) (Vazquez-Barquero et al., 2000) was used to

assess the level of disability and the number of days lost from work in the past 30 days. This measure was developed with a view to assess cross cultural validity and applicability across a spectrum of educational backgrounds. Day-to-day functioning in six activity domains is assessed: understanding and communicating, getting around, self-care, getting along with people, life activities and participation in society. Results provide an overall score. Weighted scores range from 0-100 with higher scores reflecting greater disability.

3.7.5.2 Life Events

The List of Threatening Events (LTE) was developed by comparing two methods for rating events (method of Brown and Harris, and Tennant and Andrews life event inventory) in a survey of the general population and the psychiatric outpatients with affective disorders (Brugha et al., 1985). The choice of the 12 event categories in this scale was based on the need to identify significant life events, those most likely to be rated as providing significant contextual threat.

3.7.5.3 Social Support/ Social Network

Close Persons Questionnaire (CPQ) (Stansfeld and Marmot, 1992) is a structured questionnaire assessing several dimensions of social support, including emotional/confiding, practical and negative aspects of support from up to four identified sources. It has the added advantage of addressing the dimension of social networks, such as frequency of contact with relatives and friends and with colleagues, attendance of religious services, membership of and attendance at clubs etc. The CPQ has been used on Asian population including Pakistanis living in UK (Stansfeld and

Sproston, 2002) however it has not been previously been used in Pakistan, but nevertheless was included in the main study for want of a local alternative.

3.7.5.4 Emancipation

In the main study we also included an adhoc measure to assess participant's level of emancipation vis-à-vis their parents and/or husbands. The aim was to address the level of conflict that women might experience between their own expectations and their experience. This included four question items:

were you allowed to

1) go out with your friends?

2) work outside of home?

3) work in a male environment?

And

4) If you like a man would you tell your parents (for married women it was asked in the past tense)?

The time constraint of the present study did not allow us to validate this adhoc measure before its inclusion in the study.

3.7.5.5 Notes on Translation

All measures were carefully translated and back translated into Urdu, followed by a process of expert consensus review. The PBI and Marital Satisfaction scales had undergone this process for the pilot studies. Good quality Urdu versions of the SRQ-20, already existed. The CPQ, LTE, and WHODAS II were translated and back translated for the main study as they had not been included in the pilot.

3.7.6 Strategy for Analysis

1) Describe the extent and pattern of non-response

2) Estimate the prevalence of common mental disorder (SRQ-20 >= 8) by city and district (high SES/ low SES)

3) Describe the distribution of the hypothesized risk factors (indicators of gender disadvantage), and of the potential confounding variables (socio-economic status, life events, social support, health status

4) Estimate the associations between the indicators of gender disadvantage, across the life course.

5) Estimate the univariate associations between gender disadvantage indicators and outcome using chi squared tests, t-tests or non-parametric equivalents as appropriate

6) Estimate in a similar fashion the univariate associations between potential confounding variables and outcome, and potential confounding variables and gender disadvantage indicators.

7) Check for the presence of confounding by stratifying the estimation of the association between gender disadvantage indicators and outcome by SES and other potential confounding variables (Mantel Haenszel odds ratios) and interaction (test for common odds) by stratifying by SES.

8) In multivariable analysis (logistic regression) estimate the independent associations of gender disadvantage indicators factors with the outcome having controlled simultaneously for the potential confounding effect of SES and other potential confounding variables.

4 Results

4.1 Response Rate

A total of 525 households were door knocked, 486 households included eligible women as residents. Out of these 486 households, 23 did not initially open their doors to the research assistants in High SES Islamabad (ISB). These households were later approached by the main researcher accompanied by the assistants, with a reference of a revered individual residing in the neighborhood, and we were given access to all 23 of them. In high SES Rawalpindi (RWP) three interviews were left incomplete because the husband walked in and did not allow the wife to continue. In low SES Rawalpindi four women were not allowed to participate by their husbands and six were not permitted by their mother in-laws. In low SES Islamabad eight women themselves refused to participate. In High SES Islamabad five women gave appointments but could not be reached.

In most instances male members welcomed the research team and acquiesced to the interview being conducted in their home. Our overall response rate was 95.2%. In high SES Rawalpindi it was 97.6%, low SES Rawalpindi had a response rate of 92.5%. The response rate in low SES Islamabad was 94.9% and high SES Islamabad had a response rate of 96.1%.

4.2 Characteristics of the Sample

In this section the data is presented stratified by catchment area; low/ high socio-economic status (SES) Islamabad (ISB) and low/ high SES Rawalpindi (RWP).

Mantel Haenszel summary odds ratios have been calculated giving the independent effect of city (RWP vs. ISB) adjusting for SES, and SES (high vs. low) adjusting for city.

Firstly, I describe the demographic characteristics of the sample, and the prevalence of CMD in each catchment area. Next, I present the distribution of the potential risk factors, the markers of gender disadvantage. Finally, I estimated the distribution of potential confounding variables; some of these pertain only to the sub-group of women who are married.

4.2.1 Demographic Characteristics

Details of demographic characteristics are given in table 4.1. The age of participants, according to inclusion criterion ranged from 20 to 35 years. The women resident in high SES Islamabad were younger than others. Women living in high SES districts were more likely than those living in low SES districts to be employed outside of the home. Women living in low SES districts were more likely to be married (an effect accounted for by the high proportion of married women in low SES Islamabad).

Table 4.1: Demographics in the four catchment areas, with the effects of City and SES

	Low SES ISB	High SES ISB	Low SES RWP	High SES RWP	Effect of City RWP vs. ISB	Effect of SES High vs. Low
	N=150 (%)	N=125 (%)	N=125 (%)	N=125 (%)	OR_{MH} (95%CI)	OR_{MH} (95%CI)
Age Mean (SD)	27.1 (5.2)	25.2 (4.8)	26.5 (4.8)	26.8 (4.6)		
Age Distribution						
20-25	61 (40.7)	77 (61.6)	59 (47.2)	56 (44.8)		
26-30	43 (28.7)	27 (21.6)	40 (32.0)	42 (33.6)		
31-35	46 (30.7)	21 (16.8)	26 (20.8)	27 (21.6)		
Employed						
Yes (vs. no)	18 (12.0)	30 (24.0)	23 (18.4)	33 (26.4)	1.3 (0.8-2.0)	1.9 (1.2-2.9)
Marital Status						
Married	102 (68.0)	54 (43.2)	74 (59.2)	74 (59.2)	1.1 (0.8-1.6)	0.6 (0.4-0.8)
Single	36 (24.0)	58 (46.4)	34 (27.2)	37 (29.6)	Comparison - Married vs. single	
Engaged	11 (7.3)	12 (9.6)	11(8.8)	12 (9.6)		
Separated	0	1 (0.8)	4 (3.2)	1 (0.8)		
Divorced	0	0	1 (0.8)	0		
Family system						
Nuclear (vs. joint)	112 (74.7)	66 (52.8)	57 (45.6)	57 (45.6)	0.4 (0.3-0.6)	0.6 (0.4-0.8)

4.2.2 COMMON MENTAL DISORDER

The category of common mental disorder is signified by a score of 8 and above on the SRQ-20. The distribution ranged from nought to 20, and was slightly positively skewed with a median of 8.0 and mean of 8.6, SD= 4.7. The interquartile range was from five to twelve. The prevalence of probable psychiatric morbidity for all four catchment sites are given in table 4.2. The prevalence varied significantly between sites (χ^2 = 95.8 p < 0.0001), and after adjusting for city and SES it is evident that there is an independent effect of both city and SES, however, SES accounts for a greater proportion of the variance; 19.4% compared to 5.8% for city.

Table 4.2: Prevalence of common mental disorder (based on SRQ score >= 8) in each of the four catchment areas, with the effect of City and SES.

	Low SES ISB	**High SES ISB**	**Low SES RWP**	**High SES RWP**	**Effect of City RWP vs. ISB**	**Effect of SES High vs. Low**
	N=150	N=125	N=125	N=125	OR_{MH} (95%CI)	OR_{MH} (95%CI)
SRQ score >=8	124 (82.7)	56 (44.8)	78 (62.4)	33 (26.4)	0.4 (0.2-0.5)	0.1 (0.1-0.2)
Mean (SD)	11.4 (4.1)	7.6 (3.6)	9.6 (5.0)	5.3 (3.5)	F=32.2*	F=125.7
95% CI	10.7-12.1	7.0-8.3	8.7-10.5	4.7-6.0	P<0.0001	P<0.0001
					Eta=5.8%	Eta=19.4%

*F= One way Anova

Figure 4.1(a): SRQ distribution by City

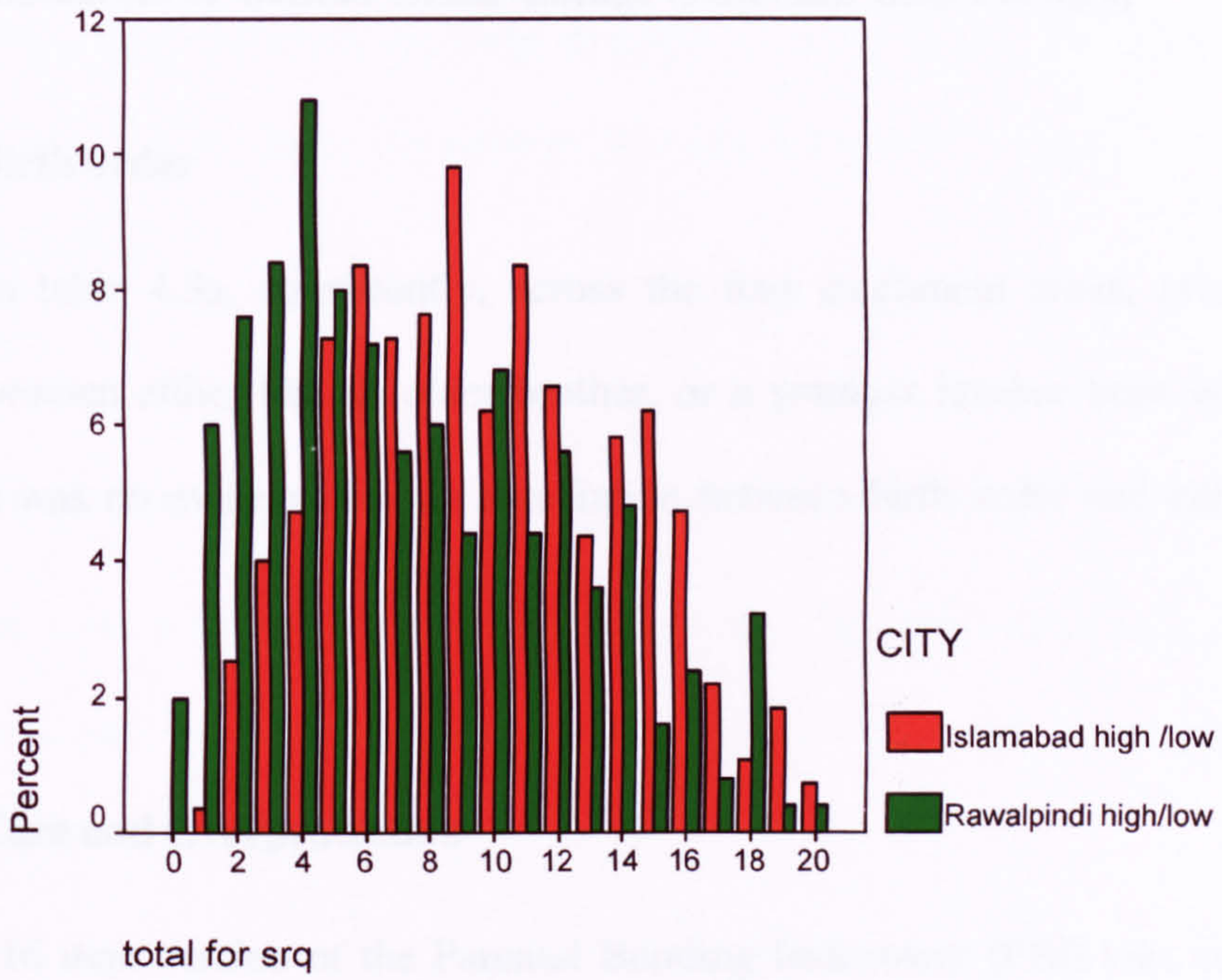
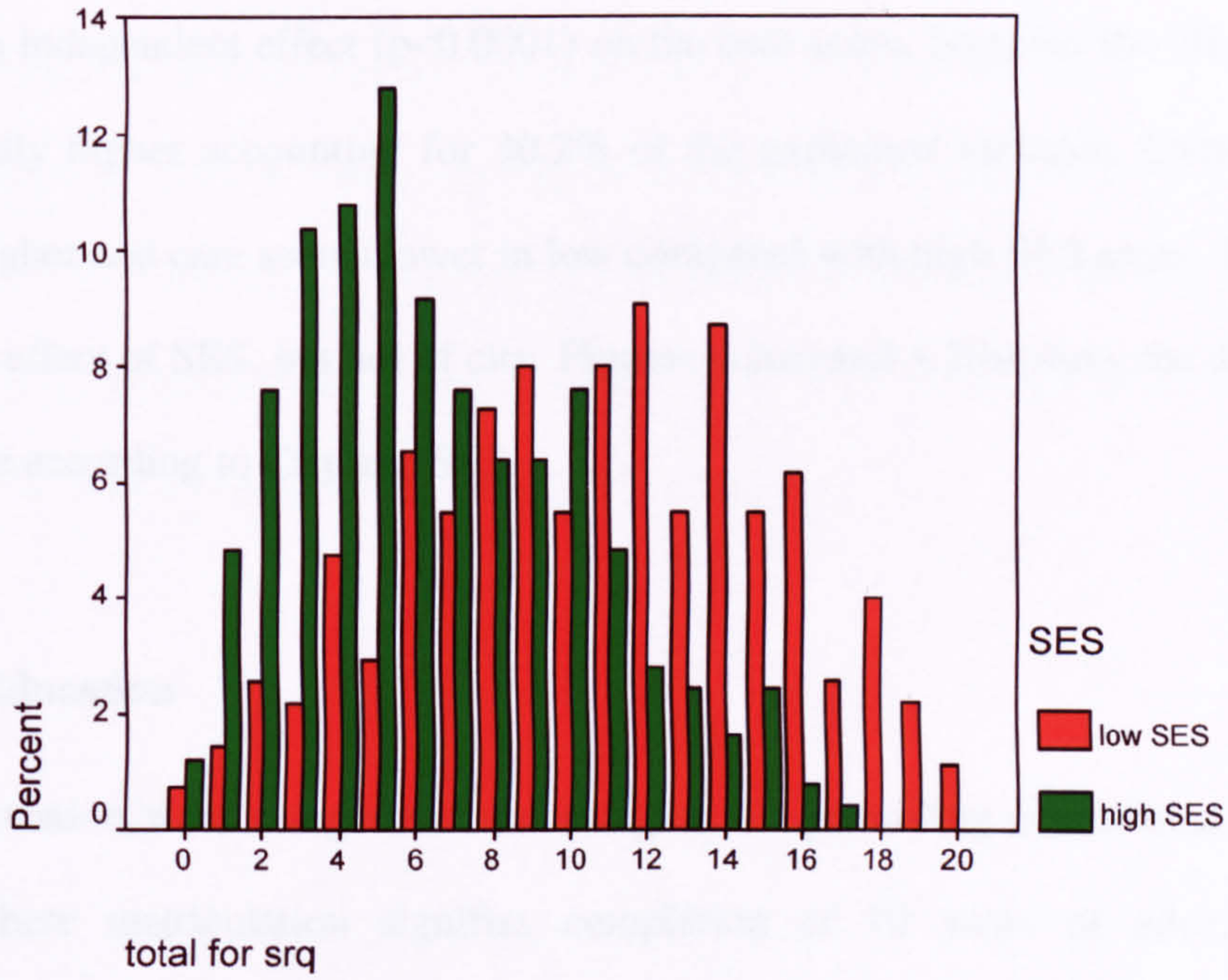


Figure 4.1(b): SRQ distribution by SES



4.2.3 Indicators of Gender Disadvantage (Potential Risk Factors)

4.2.3.1 Birth order

As shown in table 4.3a, consistently, across the four catchment areas, around three-quarters of women either had an older brother, or a younger brother born within three years. There was no evidence for an association between birth order and either city or SES.

4.2.3.2 Care and Overprotection

The shorter 16 item version of the Parental Bonding Instrument (PBI) was used. Seven questions address care while the other nine assess overprotection. Care scores are higher in Rawalpindi than Islamabad and in high compared with low SES areas. City and SES both have an independent effect ($p<0.0001$) on the care score, however the effect of SES is substantially higher accounting for 30.2% of the explained variance. Overprotection scores are higher and care scores lower in low compared with high SES areas. There is an independent effect of SES, but not of city. Figures 4.2(a) and 4.2(b) show the distribution of Care score according to City and SES.

4.2.3.3 Education

Years of education were categorized according to the prevailing educational system in Pakistan, where matriculation signifies completion of 10 years of education, and intermediate 12 years of education. Level of education was very strongly associated with

SES district, with only one fifth of those in high SES areas having received less than 12 years education, compared with the large majority of those in low SES districts. There was also a significant tendency for women in Islamabad to be less well educated than those in Rawalpindi.

4.2.3.4 Age at Marriage

A total of 304 women (57.9%) were currently married. Women residing in the low SES districts were much more likely to get married at an earlier age, but there was no independent effect of city after controlling for SES.

4.2.3.5 Marital Satisfaction

The distribution of marital satisfaction scores is bimodal across each of the four catchment areas. The distribution according to City and SES are shown in figures 4.3 (a) and (b) respectively. Scores were therefore dichotomized into dissatisfied (-14 to 0) and satisfied (1 to 14). Overall, 210 women (69.1%) were dissatisfied with their marriage. There were independent effects of both City and SES, with Islamabad women and those living in low SES areas being more likely to be dissatisfied.

Table 4.3(a): Indicators of gender disadvantage in the four catchment areas, with the effects of City and SES

	Low SES ISB	High SES ISB	Low SES RWP	High SES RWP	Effect of City RWP vs. ISB	Effect of SES High vs. Low
	N=150 (%)	N=125 (%)	N=125 (%)	N=125 (%)	OR_{MH} (95%CI)	OR_{MH} (95%CI)
Birth order						
Has brother						
Older brother	91 (60.7%)	81 (64.8%)	80 (64.0%)	68 (54.4%)	0.8 (0.6-1.2)	0.9 (0.6-1.2)
Younger < 3 yrs	27 (18.0%)	15 (12.0%)	8 (6.4%)	22 (17.6%)	Comparison – older brother; yes	
Younger > 3 yrs	24 (16.0%)	15 (12.0%)	20 (16.0%)	25 (20.0%)	vs. no	
No brother						
Only child	4 (2.7%)	3 (2.4%)	1 (0.8%)	2 (1.6%)		
Eldest daughter	3 (2.0%)	2 (1.6%)	6 (4.8%)	2 (1.6%)		
2nd or 3rd daughter	1 (0.7%)	9 (7.2%)	10 (8.0%)	6 (4.8%)		
Care					F = 19.8*	F = 226.26*
Mean (SD)	11.2 (2.4)	14.6 (3.9)	11.7 (2.4)	16.6 (3.4)	P<0.0001	P<0.0001
95% CI	10.8-11.6	13.9-15.3	11.3-12.1	16.0-17.2	Eta =3.7%	Eta =30.2%
Overprotection					F = 1.03*	F = 450.29*
Mean (SD)	22.1 (3.6)	15.2 (3.3)	22.1 (3.1)	16.0 (3.8)	P = 0.309	P<0.0001
95% CI	21.6-22.7	14.6-15.8	21.0-22.6	15.3-16.7	Eta =0.2%	Eta =46.3%

*F= One way Anova

Table 4.3(b): Indicators of gender disadvantage in the four catchment areas, with the effects of City and SES

	Low SES ISB	High SES ISB	Low SES RWP	High SES RWP	Effect of City RWP vs. ISB	Effect of SES High vs. Low
	N=150	N=125	N=125	N=125	OR_{MH} (95%CI)	OR_{MH} (95%CI)
Education						
<=12 Years	136 (90.7%)	27 (21.6%)	87 (69.6%)	23 (18.4%)	0.5 (0.3-0.7)	0.1 (0.0-0.1)
No education	23 (15.3%)	0	9 (7.2%)	0	Contrast: <=12 years vs. >12 years	
Matriculation	98 (65.3%)	7 (5.6%)	58 (46.4%)	2 (1.6%)		
Intermediate	15 (10.0%)	20 (16.0%)	20 (16.0%)	21 (16.8%)		
Graduate	11 (7.3%)	44 (35.2%)	26 (20.8%)	55 (44.0%)		
Post Graduate	3 (2.0%)	54 (43.2%)	12 (9.6%)	47 (37.6%)		
Age at marriage						
Mean (SD)	18.7 (1.5)	23.6 (3.1)	19.3 (1.9)	22.8 (1.8)	F= 0.13*	F= 300.56*
95% CI	18.4-19.0	22.7-24.4	18.9-19.8	22.4-23.3	p= 0.718	p<0.0001
					Eta = 0.0%	Eta= 49.1%
Marital satisfaction	N= 102	N=54	N=74	N=74	Contrast: Satisfaction (1 to 14) vs. Dissatisfaction (-14 to 0)	
Dissatisfied (-14 to 0)	89 (87.3%)	36 (66.7%)	55 (74.3%)	30 (40.5%)	0.4 (0.2-0.6)	0.3 (0.2-0.4)

*F= One way Anova

Figure 4.2 (a): Care Score in Islamabad and Rawalpindi

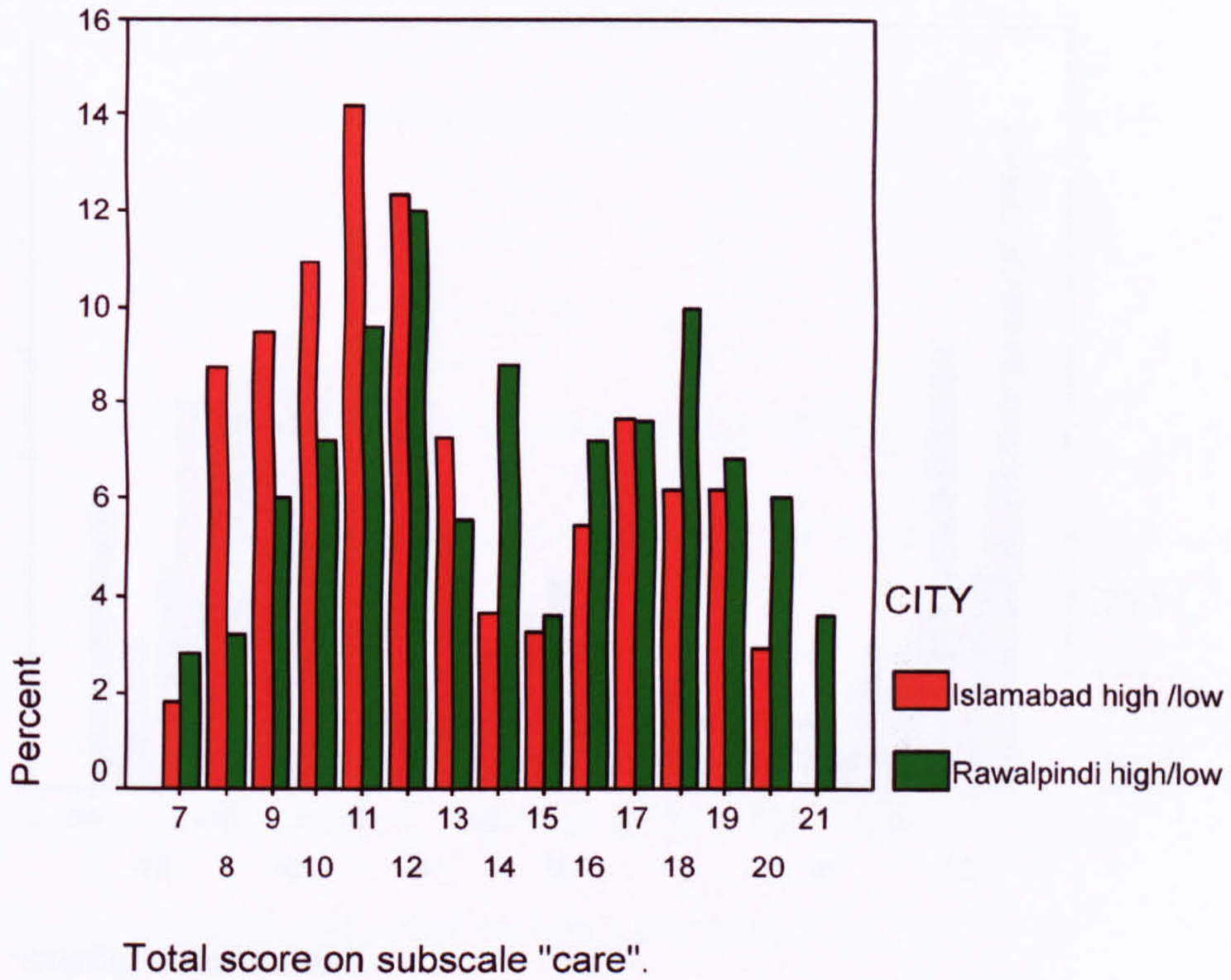


Figure 4.2 (b): Care Score According to Low and High SES

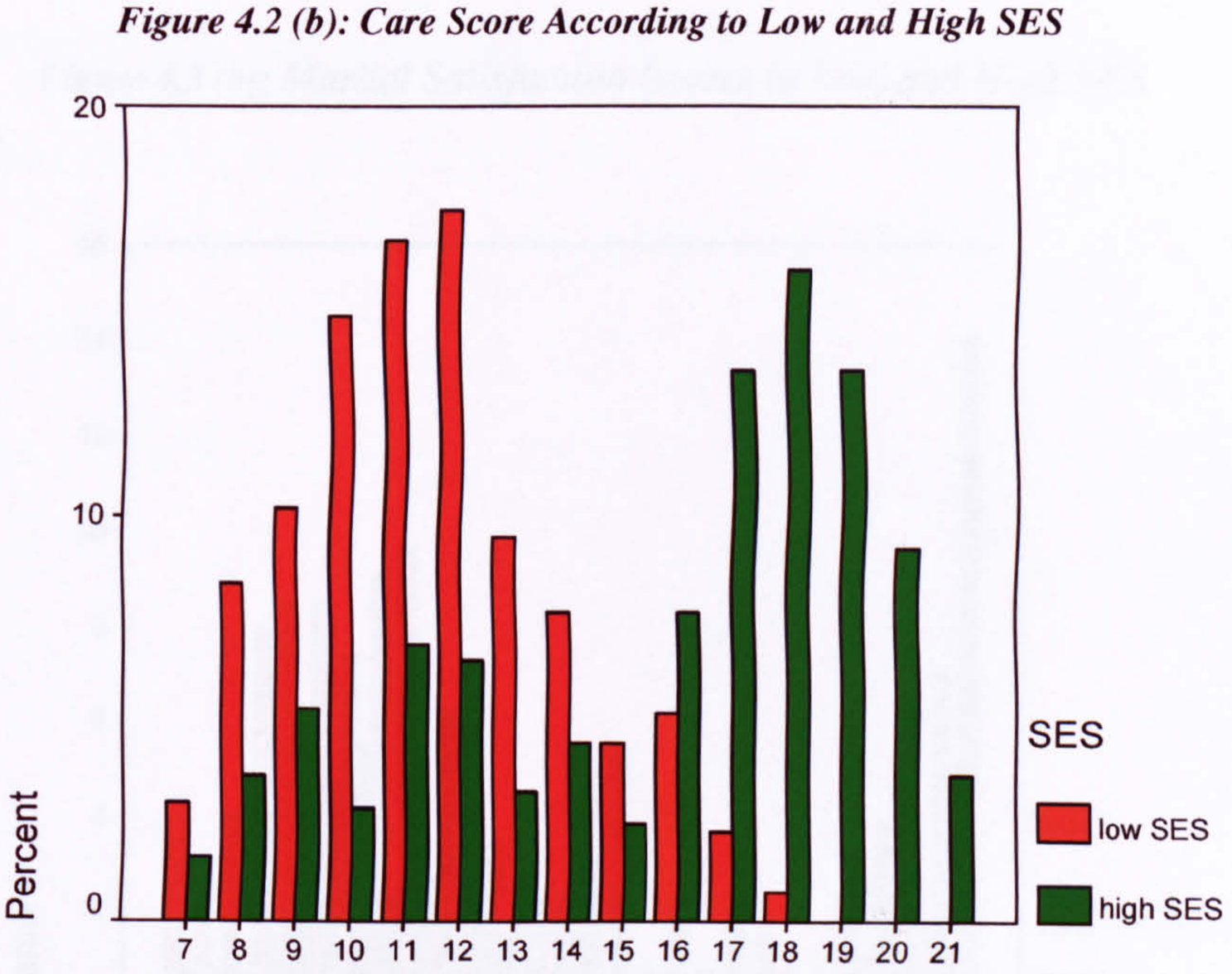


Figure 4.3 (a): Marital Satisfaction Scores in Islamabad and Rawalpindi

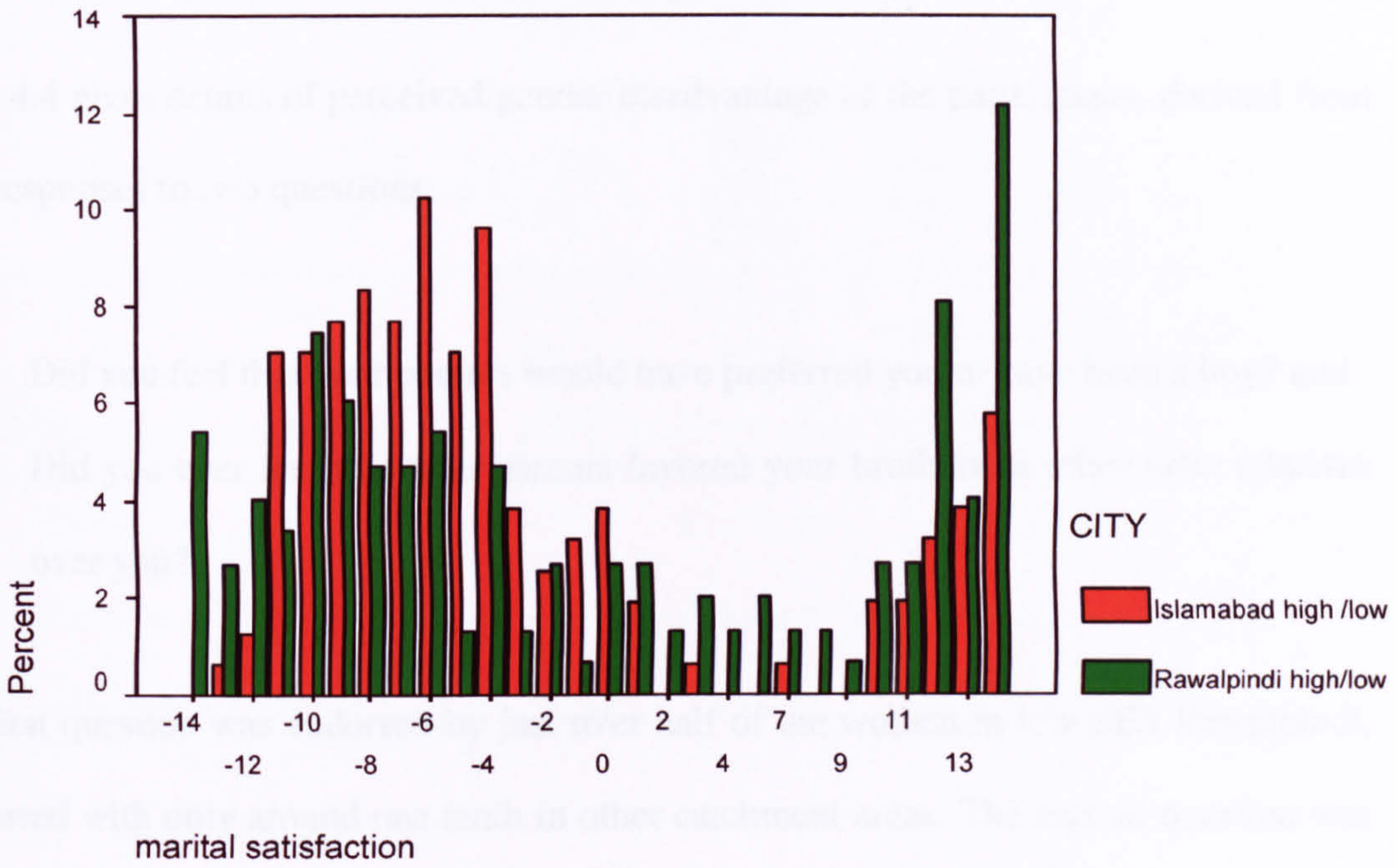
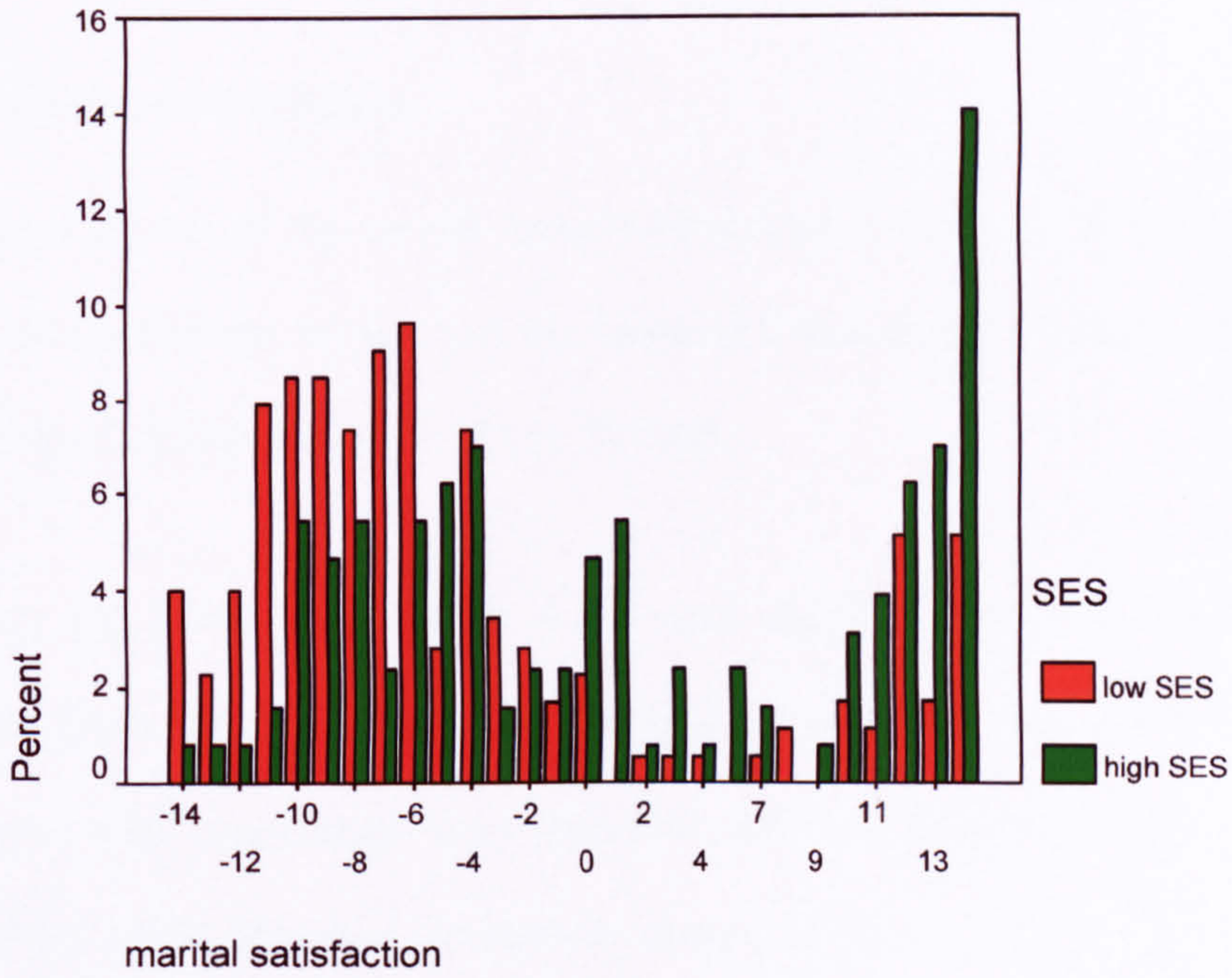


Figure 4.3 (b): Marital Satisfaction Scores in Low and High SES



4.2.3.6 Perception of Gender Disadvantage

Table 4.4 gives details of perceived gender disadvantage of the participants, derived from their responses to two questions:

1) Did you feel that your parents would have preferred you to have been a boy? and
2) Did you ever feel that your parents favored your brothers or other male relatives over you?

The first question was endorsed by just over half of the women in low SES Rawalpindi, compared with only around one tenth in other catchment areas. The second question was endorsed more commonly by women in both low SES areas, but again there was a significant effect of city with Rawalpindi women being more likely to perceive gender disadvantage.

Table 4.4: Perception of gender disadvantage in each of the four catchment areas, with the effect of City and SES

	Low SES ISB	High SES ISB	Low SES RWP	High SES RWP	Effect of City RWP vs. ISB	Effect of SES High vs. Low
	N=150 (%)	N=125 (%)	N=125 (%)	N=125 (%)	OR_{MH} (95%CI)	OR_{MH} (95% CI)
Did you feel that your parents would have preferred you to have been a boy?						
Q.1	69 (46.0)	34 (27.2)	87 (69.9)	27 (21.6)	1.6 (1.1-2.2)	0.2 (0.2-0.4)
Did you ever feel that your parents favored your brothers or other male relatives over you?						
Q.2	18 (12.0)	13 (10.4)	67 (53.6)	12 (9.6)	3.9 (2.5-6.1)	0.2 (0.1-0.4)

4.2.4 Potential Confounding Variables

4.2.4.1 Socio-economic Status

Table 4.5a gives details of the overall household income as well as the father's income for both married and single women and the husband's income for married women alone. The current rate of exchange with 1 US$ is 57 PKR.

Twelve luxury and utility items (Table 4.5b) were identified as potential indicators of family wealth. However, two items; motorcycle and cycle were dropped from the scale since their item total correlations were very low, 0.03 and 0.08 respectively. 10 items were retained for which item total correlations ranged between 0.30 and 0.76. Cronbach's

Alpha was 0.89. The unidimensional scale structure was further supported by a Principal Component analyses in which all of the items loaded heavily on a single factor

Income was consistently much lower in low SES compared with high SES areas. There was also a consistent tendency for income levels to be lower in low SES Islamabad compared with low SES Rawalpindi, but higher in high SES Islamabad compared with high SES Rawalpindi. While there was a statistically significant independent effect for both City and SES, the SES effect predominated accounting for 42% variance compared to 18% explained by City. Similarly, levels of household wealth were again strongly influenced by SES area, and less strongly in this case by city.

Table 4.5(a): Household Income and Wealth the Four Catchment Areas, with the Effects of City and SES

	Low SES ISB	High SES ISB	Low SES RWP	High SES RWP	Effect of City RWP vs. ISB	Effect of SES High vs. Low
	N=150 (%)	N=125 (%)	N=125 (%)	N=125 (%)	OR_{MH} (95% CI)	OR_{MH} (95% CI)
Household Income in PKR*						
1 (2,000-7,500)	89 (59.3)	0	37 (29.6)	0		
2 (8,000-15,000)	61 (40.7)	0	86 (68.8)	0		
3 (15,500-40,000)	0	46 (36.8)	2 (1.6)	77 (61.6)		
4 (41,000-200,000)	0	79 (63.2)	0	48 (37.8)		
Wealth**						
1 (0-1)	81 (54.0)	7 (5.6)	26 (20.8)	1 (0.9)	2.5 (1.4-4.5)	59.7 (34.0-104.8)
2 (2-4)	62 (41.3)	14 (11.2)	77 (61.6)	12 (9.6)	Comparison: low wealth (1-2) vs.	
3 (5-8)	5 (3.3)	45(36.0)	21 (16.8)	48 (38.4)	high wealth (3-4)	
4 (9-10)	2 (1.3)	59 (47.2)	1 (0.8)	64 (51.2)		

*57 Pakistani Rupees=1 US $ **Luxury/utility items owned by Household

Table 4.5 (b): Households with Luxury/ Utility Items in All Four Catchment Areas with Effect of City and SES

WEALTH INDICATORS	Low SES ISB	High SES ISB	Low SES RWP	High SES RWP	Effect of City RWP vs. ISB	Effect of SES High vs. Low
	N=150 (%)	N=125 (%)	N=125 (%)	N=125 (%)	OR (95%CI)	OR (95%CI)
TV (YES)	120 (80.0)	125 (100)	98 (78.4)	119 (95.2)	0.7 (0.4-1.2)	11.2 (4.6-27.1)
VCR (YES)	30 (20.0)	96 (76.8)	40 (32.0)	102 (81.6)	1.6 (1.0-2.4)	11.1 (7.4-16.8)
COMPUTER (YES)	25 (16.7)	104 (83.2)	16 (12.8)	93 (74.4)	0.6 (0.4-1.0)	22.1 (14.0-35.0)
AC (YES)	10 (6.7)	91 (72.8)	9 (7.2)	101 (80.8)	1.4 (0.8-2.3)	44.3 (25.5-77.0)
CAR (YES)	19 (12.7)	104 (83.2)	19 (15.2)	24 (19.2)	1.0 (0.6-1.6)	28.2 (17.6-45.1)
SERVANTS (YES)	13 (8.7)	99 (79.2)	16 (12.8)	109 (87.2)	1.6 (1.0-2.7)	42.9 (25.6-71.9)
VISITS ABROAD(YES)	9 (6.0)	58 (46.4)	7 (5.6)	50 (40.0)	0.7 (0.5-1.2)	12.4 (7.0-21.8)
HOME OWN/RENT (OWN)	13 (8.7)	67 (53.6)	85 (68.0)	83 (66.4)	4.6 (3.2-6.8)	2.7 (1.8-3.9)
BEDROOMS (3 or >)	8 (5.3)	99 (79.2)	54 (43.2)	108 (86.4)	4.4 (2.7-7.1)	18.4 (11.4-29.7)
BATHROOMS (3 or >)	4 (2.7)	91 (72.8)	24 (19.2)	105 (84.0)	3.0 (1.8-5.1)	37.5 (21.8-64.5)
Wealth total (5-10)	7 (2.9)	104 (42.4)	22 (9.0)	112 (45.7)	2.5 (1.4-4.5)	59.7 (34.0-104.8)

4.2.4.2 Life Events

Using the list of threatening events (Brugha et al., 1985), participants were asked to report the experience of any of the twelve life events over the past 12 months. With one point allotted for each life event experienced the potential score ranged from 0-12. No respondents reported being 'sacked from job'. City did not exhibit an independent effect after controlling for SES, however, SES did have an independent effect after controlling for City with women from low SES areas more likely to have experienced a life event (Table 4.6a).

Table 4.6 (a): Number of Life Events Experienced in the Last One Year in All Four Catchment Areas with the Effect of City and SES

	Low SES ISB N=150 (%)	**High SES ISB** N=125 (%)	**Low SES RWP** N=125 (%)	**High SES RWP** N=125 (%)	**Effect of City RWP vs. ISB** OR_{MH} (95% CI)	**Effect of SES High vs. low** OR_{MH} (95% CI)
0	43 (28.7)	46 (36.8)	32 (25.6)	48 (38.4)	1.0 (0.7-1.5)	0.6 (0.4-0.8)
1	53 (35.3)	39 (31.2)	41 (32.8)	39 (31.2)	Contrast: 0 vs. 1 or more	
2+	54 (36.0)	40 (32.0)	52 (41.6)	38 (30.4)		

For three of the 12 individual life events (Table 4.6b), there was an independent effect of SES after adjusting for city, with Mantel Haenszel summary odds ratios (high SES vs. Low SES) of 0.2 (0.1-0.5) for LE1; 'serious injury or illness to subject', 0.5 (0.3-1.0) for LE 8 'Unemployed or seeking work for more than 1 month' and 0.1 (0.1-0.3) for LE10 'Major financial Crisis'

Table 4.6 (b): Experience of Individual Life Events Over the Last One Year in all Four Catchment Areas

Life Events	Low SES ISB N =150 (%)	High SES ISB N =125 (%)	Low SES RWP N =125 (%)	High SES RWP N =125 (%)
Serious Injury or Illness to subject.	19 (12.7)	6 (4.8)	22 (17.6)	3 (2.4)
Serious Injury or Illness to a close relative.	34 (22.7)	29 (23.2)	29 (23.2)	32 (25.6)
Death of immediate or extended family member	35 (23.3))	20 (16.0)	17 (13.6)	12 (9.6)
Death of close family friend or 2nd degree relative	33 (22.0)	42 (33.6)	41 (32.8)	38 (30.4)
Separation due to Marital Difficulties	1 (0.7)	1 (0.8)	4 (3.2)	2 (1.6)
Broke off a steady relationship	5 (3.3)	5 (4.0)	7 (5.6)	8 (6.4)
Serious Problem with close friend, neighbour or relative	12 (8.0)	13 (10.4)	8 (6.4)	18 (14.4)
Unemployed or Seeking work for more than 1 month	23 (15.3)	8 (6.4)	14 (11.2)	11 (8.8)
Sacked from Job	0	0	0	0
Major financial Crisis	33 (22.0)	6 (4.8)	42 (33.6)	6 (4.8)
Problems with Police & Court Appearance	5 (3.3)	2 (1.6)	2 (1.6)	0
Something Valuable Lost or Stolen	6 (4.0)	6 (4.8)	5 (4.0)	3 (2.4)

4.2.4.3 Social Support

Social support was assessed using the Close Persons Questionnaire (Stansfeld and Marmot, 1992). There were three dimensions.

1) Confiding/emotional support comprising eight questions, scores ranging from 8-32
2) Practical support with three questions, scores ranging from 3-12
3) Negative aspects of support, comprising four questions, scores ranging from 4-16.

Two participants did not report any close person. They were treated as missing cases and excluded from the analysis.

Confiding/ emotional support, and practical support were each higher in high SES compared with low SES areas; negative support scores were higher in low SES than high SES areas (Table 4.7). The strongest effect of SES was seen for confiding/ emotional support.

Table 4.7: Mean Score on Close Persons Questionnaire Social Support Scale in all Four Catchment Areas with the Effect of City and SES

	N=149	N=124	N=125	N=125		
	Low SES ISB	**High SES ISB**	**Low SES RWP**	**High SES RWP**	**Effect for City RWP vs. ISB**	**Effect for SES High vs. Low**
Confiding/ Emotional support						
Mean (SD)	22.1 (3.8)	25.1 (4.4)	23.6 (3.7)	25.9 (4.0)	F=11.16*	F=56.68
95% CI	21.5-22.8	24.3-25.8	22.9-24.2	25.2-26.6	p=0.001	p<0.0001
					Eta=2.1%	Eta=9.8%
Practical support						
Mean (SD)	8.0 (1.7)	8.4 (2.2)	8.1 (2.3)	8.7 (2.3)	F=0.717	F=7.74
95% CI	7.7-8.3	8.0-8.8	7.7-8.5	8.3-9.1	p=0.397	p=0.006
					Eta=0.1%	Eta=1.5%
Negative aspect of Support						
Mean (SD)	8.3 (1.7)	7.9 (2.1)	8.1 (2.0)	7.7 (1.9)	F=1.08	F=4.84
95% CI	8.0-8.5	7.5-8.3	7.8-8.5	7.3-8.0	p=0.297	p=0.028
					Eta=0.2%	Eta=0.9

*F= One way Anova

4.2.4.4 Social Network

Social network was assessed using the Social Network Scale, a subsection of the Close Persons Questionnaire (Stansfeld and Marmot, 1992). This included three sub-dimensions.

1) social isolation, potential scores ranging from 0-5, where a score of 5 signifies the maximum isolation.
2) network beyond household, potential scores ranging from 0-28.
3) household size categorized as living alone, living with one adult, or living with two or more adults. In our sample, none of the participants was living alone.

Women living in high SES areas were marginally less isolated, had larger networks outside of the home, and were more likely to live in larger households than women in low SES areas. These effects were all statistically significant, but of small size.

Women residing in Rawalpindi were slightly more isolated, reported fewer networks beyond household and were more likely to be living with more than two adults as compared to the Islamabad women.

Table 4.8: Social Network: Level of Isolation and Network Beyond Household Distribution in the Four Catchment Areas, with the Effect of City and SES

	Low SES ISB N=150	**High SES ISB N=125**	**Low SES RWP N=125**	**High SES RWP N=125**	**Effect of City RWP vs. ISB**	**Effect of SES High vs. Low**
Isolation Scale	N (%)	N (%)	N (%)	N (%)	OR_{MH} (95%CI)	OR_{MH} (95%CI)
0	0	1(0.8)	0	3 (2.4)	1.6 (1.1-2.3)	0.7 (0.5-1.0)
1	7 (4.7)	8 (6.4)	5 (4.0)	12 (9.6)	Comparison: low isolation	
2	57 (38.0)	49 (39.2)	29 (23.2)	35 (28.0)		
3	58 (37.7)	45 (36.0)	57 (45.6)	47 (37.6)	(0,1,2) vs. high isolation (3,4,5)	
4	22 (14.7)	20 (16.0)	29 (23.2)	26 (20.8)		
5	6 (4.0)	2 (1.6)	5 (4.0)	2 (1.6)		
Household size Two or more (vs. one only)	N (%) 88 (58.7)	N (%) 109 (87.2)	N (%) 98 (78.4)	N (%) 105 (84.0)	1.7 (1.1-2.5)	2.8 (1.8-4.3)
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	ANOVA	ANOVA
Network beyond household	8.5 (3.7) 7.8-9.1	8.7 (3.8) 8.0-9.4	6.8 (3.1) 6.3-7.4	8.5 (3.4) 7.9-9.1	F=8.59 p=0.004 Eta=1.6%	F=8.52 p=0.004 Eta=1.6%

*F= One way Anova

4.2.4.5 Emancipation

Emancipation was measured using an ad hoc scale extracted from a set of questions addressing the liberty and freedom women experienced in their parents or their husband's home. The four items included in the scale correlated well with a Cronbachs alpha of 0.76. Responses on this scale were distributed very differently between high and low SES areas, with higher emancipation scores among women living in high SES areas. City however, did not exhibit an independent effect.

Table 4.9: Numbers (%) by Level of Emancipation in all Four Catchment Areas

	Low SES ISB N=150 (%)	**High SES ISB** N=125 (%)	**Low SES RWP** N=125 (%)	**High SES RWP** N=125 (%)	**Effect of City RWP vs. ISB**	**Effect of SES High vs. Low**
Level of Emancipation					OR_{MH} (95%CI)	OR_{MH} (95%CI)
0	52 (34.7)	7 (5.6)	30 (24.0)	8 (6.4)	0.8 (0.5-1.2)	0.2 (0.1-0.2)
1	57 (38.0)	18 (14.4)	43 (34.4)	24 (19.2)	Comparison <2 vs. 2 or more	
2	34 (22.7)	19 (15.2)	27 (21.6)	32 (25.6)		
3	6 (4.0)	35 (28.0)	20 (16.0)	29 (23.2)		
4	1 (0.7)	46 (36.8)	5 (4.0)	32 (25.6)		

4.2.4.6 Marital Circumstances

The question 'did you have a love or arranged marriage?' was asked of the (304) currently married women, out of whom only 28 (9.2%) had had a love marriage. There was an independent effect of both SES and city. Women residing in high SES as opposed to low SES, and those from Islamabad as opposed to Rawalpindi were more likely to have had a love marriage.

4.2.4.7 Fertility

Table 4.10 indicates that living in a low SES area, and living in Islamabad was associated with a longer interval between marriage and birth of a first child, an effect accounted for by the longer mean interval in the Islamabad low SES district.

Forty-six women (15.1%) did not have children, with a fairly equal distribution across the four catchment areas. However, living in a low SES area was associated with higher parity, and with a lower likelihood of lacking a boy child.

Spontaneous and procured abortions (socially acceptable questioning could not differentiate between these two causes) were more common in Islamabad than in Rawalpindi with no apparent SES effect.

Table 4.10: Fertility

	Low SES ISB N=102	High SES ISB N=54	Low SES RWP N=74	High SES RWP N=74	Effect for City RWP vs. ISB	Effect for SES High vs. Low
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	ANOVA	ANOVA
Years between marriage and first child	3.0 (2.1) 2.5-3.4	1.9 (1.9) 1.4-2.4	2.0 (1.7) 1.6-2.4	2.1 (2.0) 1.6-2.6	F=4.34 p=0.038 Eta=1.4%	F= 3.81 p= 0.052 Eta=1.3%
Parity	N (%)	N (%)	N (%)	N (%)	OR_{MH} (95%CI)	OR_{MH} (95%CI)
0	10 (9.8)	12 (22.2)	11 (14.9)	13 (17.6)	0.7 (0.4-1.2)	0.4 (0.2-0.6)
1	8 (7.8)	13 (24.1)	15 (20.3)	13 (17.6)	Comparison: 0 vs. 2 > children	
2	17 (16.7)	15 (27.8)	15 (20.3)	22 (29.7)		
3	23 (22.5)	12 (22.2)	12 (16.2)	13 (17.6)		
4+	44 (43.1)	2 (3.7)	21 (28.4)	13 (17.6)		
	N (%)	N (%)	N (%)	N (%)		
No Son	10 (10.9)	15 (35.7)	14 (22.2)	15 (24.6)	0.9 (0.5-1.6)	0.5 (0.3-0.9)
One or more abortion	71 (69.6)	38 (70.4)	44 (59.5)	42 (56.8)	0.6 (0.3-0.9)	0.9 (0.5-1.5)

4.2.5 Summary – Characteristics of the Sample

In the low SES areas, adjusting for city, women were more likely to have common mental disorder. They were also more likely to be married and less likely to work outside of the home. Among the GD indicators, those living in low SES areas had lower care scores, higher overprotection scores, less education, earlier marriage, lower marital satisfaction, and were more likely to perceive gender disadvantage. For the potential confounders women living in low SES areas were more likely to report life events, they had less social support, less networks beyond household, and reported lower levels of emancipation. As expected, women living in low SES areas reported lower household incomes, and less household wealth. Amongst the remaining confounders addressed to married women alone, the interval between marriage and birth of first child was marginally longer for those living in low SES areas, but parity was higher.

In Rawalpindi (compared with Islamabad), adjusting for SES, women were less likely to have common mental disorder. For the GD indicators, Rawalpindi women had higher care scores, more education, and were less dissatisfied with their marriage. However, on the contrary, they were more likely to perceive gender disadvantage. Rawalpindi women reported more social support but with smaller networks beyond the household.

4.3 Univariate Analysis

The outcome for all of the analyses in this next section is common mental disorder (CMD), defined as an SRQ score of eight or over. My strategy was, first to assess associations between CMD and basic demographic variables including age, marital status and living circumstances. The association with disability was estimated as a test of concurrent validity. Next, I estimated the association between each of the hypothesized indicators of gender disadvantage (birth order, perception of gender disadvantage (GD) by the participants, low care, overprotection, education, early age at marriage, and marital satisfaction) and CMD. Finally, I sought to identify associations between CMD and potential confounding variables including life events, social support, social network, socioeconomic status, and level of emancipation (for the entire sample) and marital circumstances (for married women only).

4.3.1 The Association Between Demographic Variables and Common Mental Disorder

Common mental disorder was significantly more prevalent with increasing age, and in married compared with single women (Table 4.11). Living arrangements were not associated with CMD. Women employed outside of the home were less likely than others to be suffering from CMD.

Table 4.11: Prevalence of Common Mental Disorder (SRQ score >=8) by Age, Marital Status, Family System and Employment

	Cases Proportion (%)	Chi square χ^2	P Value	Prevalence Ratio
Age				
20-25	124 / 253 (49.0)	(TFT) χ^2=8.50	p=0.004	1 (ref)
26-30	90 / 152 (59.2)			1.2 (1.0-1.4)
31-35	77 / 120 (64.2)			1.3 (1.0-1.5)
Marital Status				
Single	95 / 221 (43.0)			1 (ref)
Married	196 / 304 (64.5)	χ^2=23.91	p<0.0001	1.5 (1.2-1.7)
Family System				
Joint	128 / 233 (54.9)	χ^2=0.04	p=0.839	1 (ref)
Nuclear	163 / 292 (55.8)			1.0 (0.8-1.1)
Work outside home				
Yes	40/104(38.5)			1(ref)
No	251/421(59.6)	χ^2=15.11	p<0.0001	1.5 (1.2-2.0)

4.3.2 The Association between Disability and Common Mental Disorder

I tested for an association between common mental disorder, as defined, and disability as a concurrent validation of the SRQ. If the SRQ is a valid measure of common mental disorder, one would hypothesize that cases would have higher levels of disability. Disability was measured using the World Health Organisation's WHODAS II 12 item scale. This assesses impaired function in six domains of activity ; understanding and communicating, getting around, self care, getting along with people, life activities and participation in society.

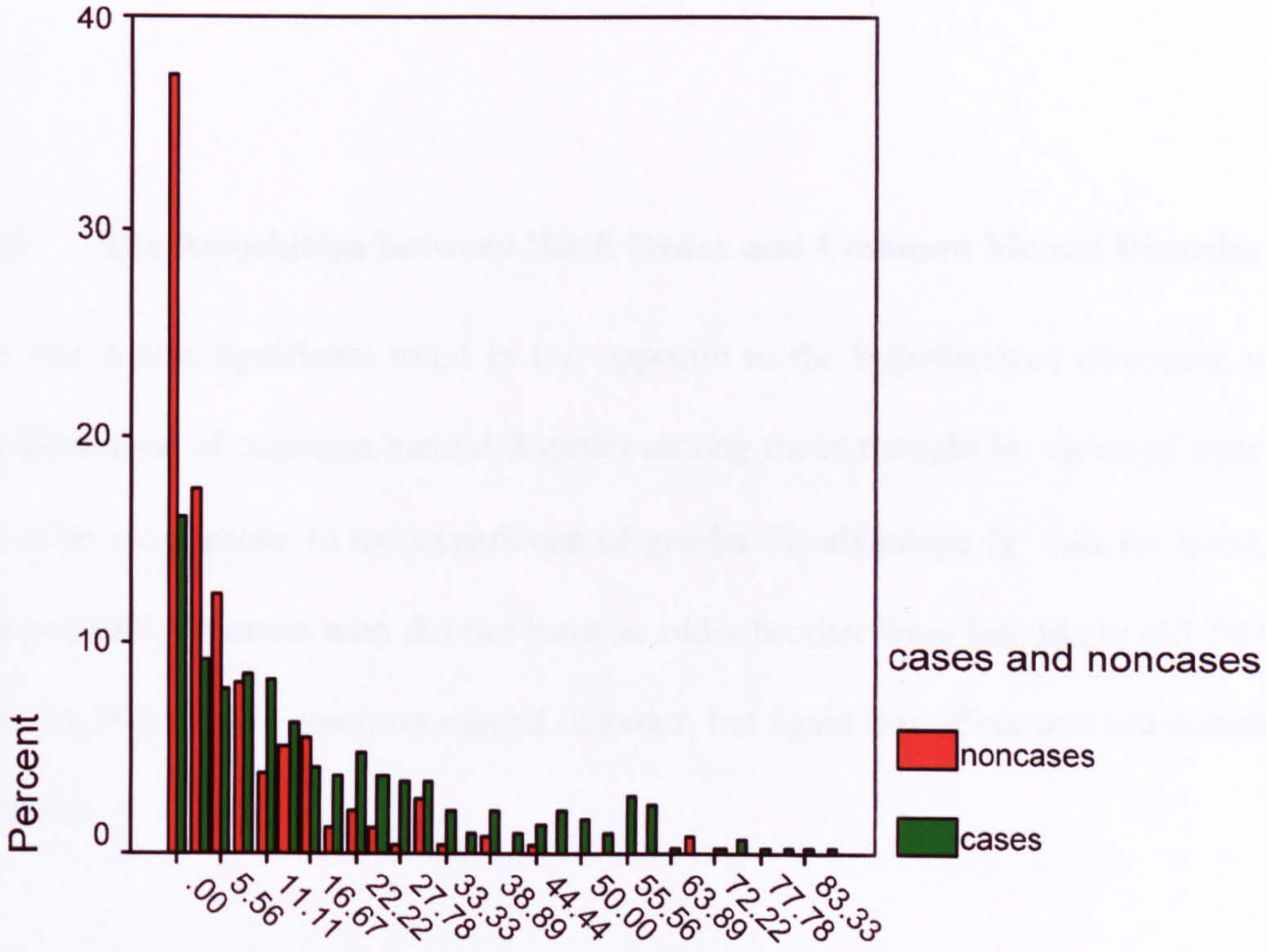
Women who were cases of CMD according to the SRQ scored substantially higher on the WHODAS than did women who were not cases (Figure 4.4). Given that the distribution of WHODAS scores was positively skewed, I applied a non-parametric test (Mann-Whitney U test), along with the parametric (t-test) in order to examine the difference between cases and non-cases for disability, both revealed significant differences for cases and non-cases (Table 4.12).

Table 4.12: Mean Disability Score for Case / Non Case

	Cases Total=291	Non Cases Total=234	Mean Diff	P Value
Mean(SD)	19.0 (19.4)	7.0 (10.2)	11.9 (9.3 –14.5)	<0.0001*
Mean Rank	(312.6)	(201.3)		<0.0001**

* T test ** Mann-Whitney U test

Figure 4.4: Disability Score Stratified by Cases and Non Cases



4.3.3 The Associations between Indicators of Gender Disadvantage (GD) and Common Mental Disorder

In this section, I examined the association between CMD and the six indicators of gender disadvantage (GD) that operate to some extent at different stages in the life course and are putative risk factors for CMD. These proxy measures were; participant's birth order, parental bonding with the mother as they were growing up (with two subscales, care and overprotection), educational attainment, and for the married women, age at marriage and marital satisfaction. The sixth indicator consisted of two direct questions pertaining to the participant's subjective perception of GD vis-à-vis their parent's attitude towards them. These were 1) Did you feel that your parents would have preferred you to have been a boy? 2) Did you feel that your parents favoured your brothers or other male relatives over you?

4.3.3.1 The Association between Birth Order and Common Mental Disorder

There was a non significant trend in the opposite to the hypothesized direction, with a lower likelihood of common mental disorder among those thought by virtue of their birth order to be more prone to the experience of gender disadvantage (χ^2 test for trend, 1 df =2.94 p=0.086). Women who did not have an older brother were less likely (35.7%) than others (64.3%) to have common mental disorder, but again this effect was not statistically significant.

Table 4.13: Prevalence of Common Mental Disorder (SRQ Score >=8) by Participant's Birth Order (Sibship)

Sibship	Cases Proportion (%)	Chi square χ^2	P Value	Prevalence Ratio
<u>Has brother</u>				
Older brother	187 / 320 (58.4)	(TFT) χ^2 =2.94 df=1	p=0.086	1 (ref)
Younger brother within 3 yrs	42 / 72 (58.3)	χ^2 =7.97 df=5	p=0.157	1.0(0.8-1.2)
Younger brother below 3 yrs	36 / 84 (42.9)			0.7(0.5-0.9)
<u>No brother</u>				
Only child	6 / 10 (60.0)			1.0(0.6-1.7)
Eldest daughter	8 / 13 (38.5)			0.6(0.3-1.3)
2nd or 3rd daughter	12 / 26 (46.2)			0.7(0.5-1.2)

4.3.3.2 The Associations between Care, Overprotection and Common Mental Disorder

The relationship between care and overprotection and CMD is graphically presented in figures 4.5(a) and 4.5(b). Women who were CMD cases reported receiving lower levels of care and higher levels of overprotection from their mothers while growing up than did those women who were not CMD cases (Table 4.14).

Table 4.14: Mean Scores on Care and Overprotection Subscales for Cases And Non Cases of Common Mental Disorder

Parental Bonding	Cases Total=291	Non Cases Total=234	Mean Diff	95% CI	p Value
Care					
Mean	11.4	16.0	4.5	4.0-5.1	p<0.0001
(SD)	(2.6)	(3.4)			
Overprotection					
Mean	21.4	16.0	5.3	4.7-6.0	p<0.0001
(SD)	(4.2)	(3.6)			

Figure 4.5(a): Care Score by SRQ Caseness

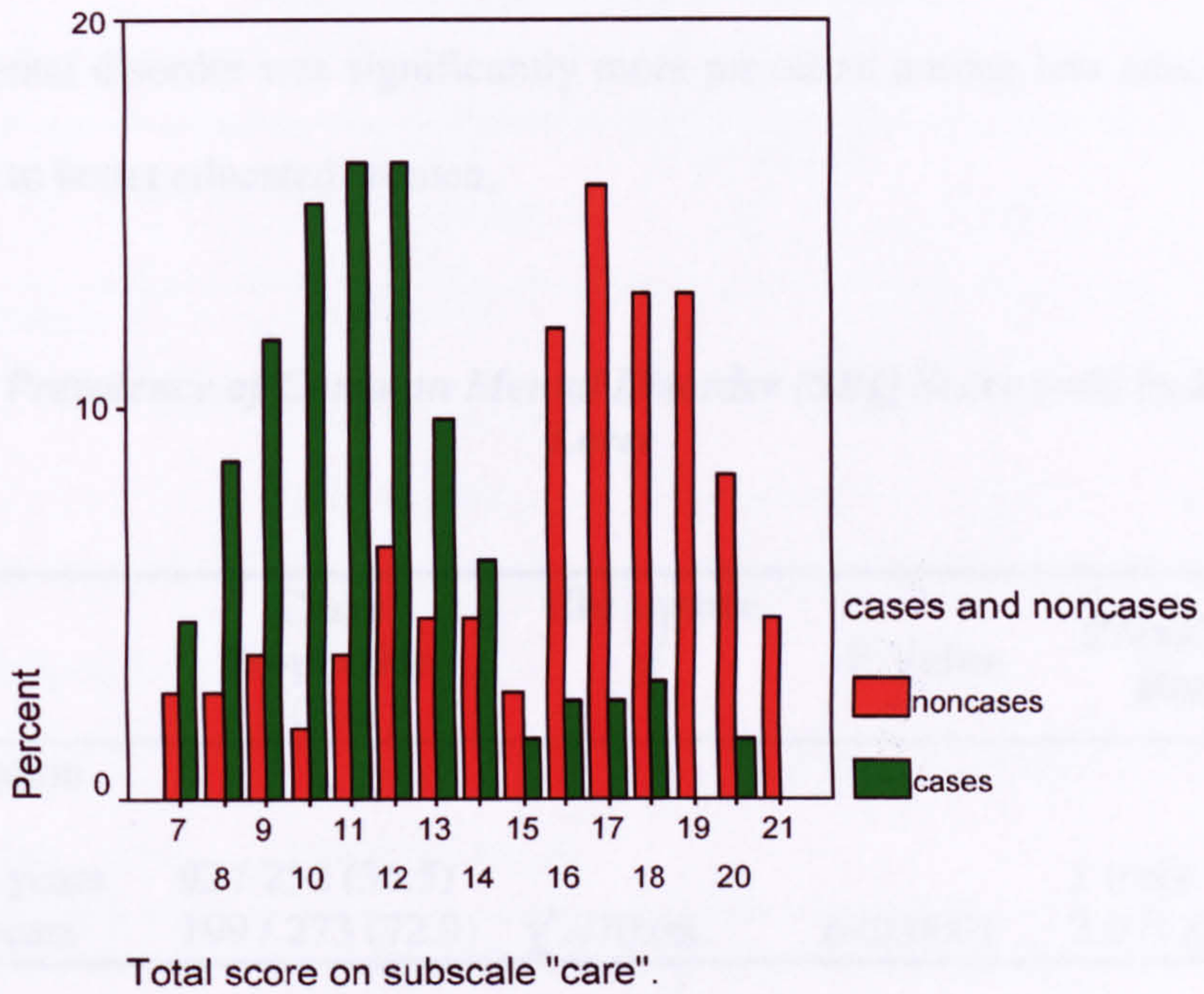
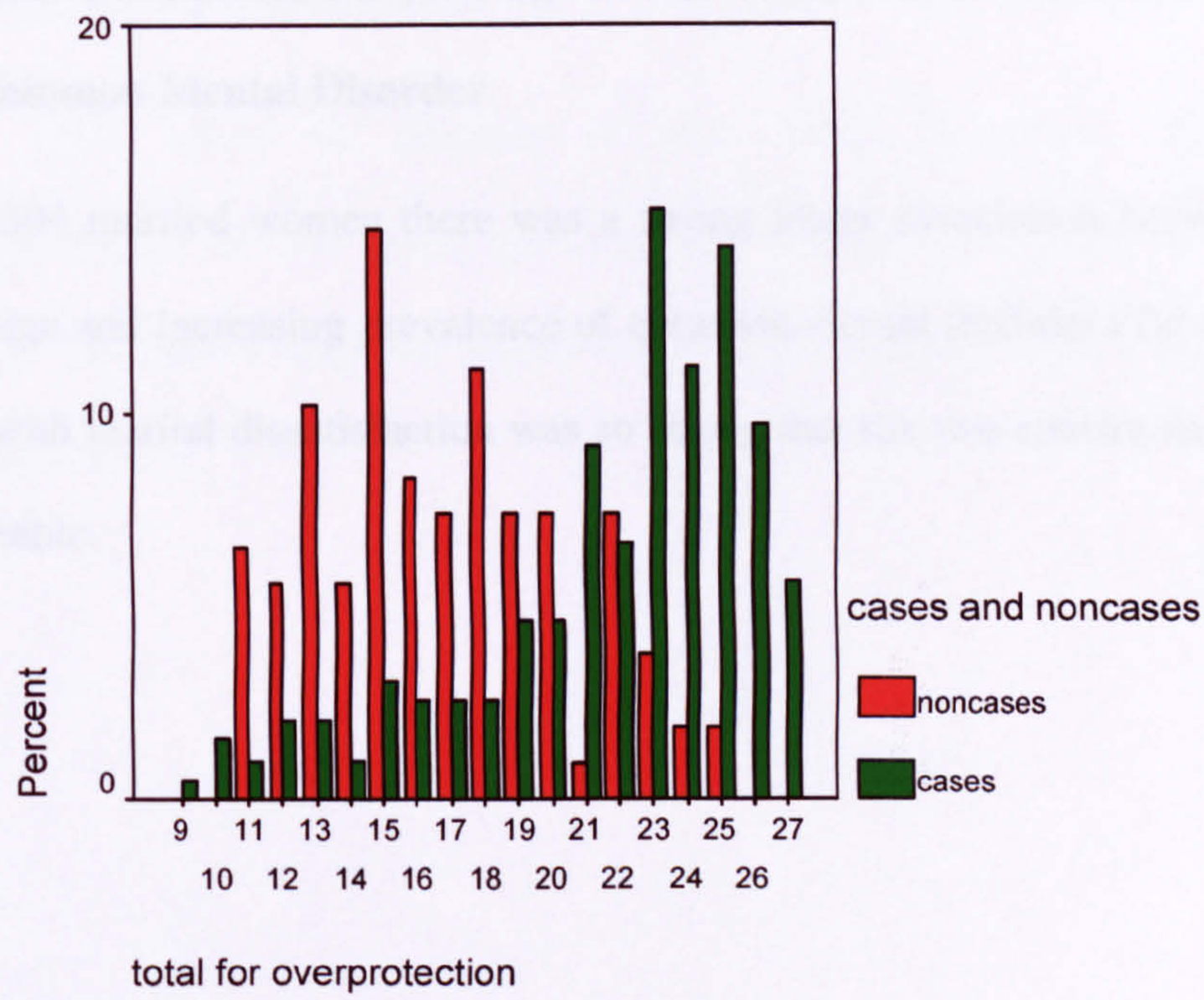


Figure 4.5(b): Overprotection Score by SRQ Caseness



4.3.3.3 The Association between Education and Common Mental Disorder

Common mental disorder was significantly more prevalent among less educated women as compared to better educated women.

Table 4.15: Prevalence of Common Mental Disorder (SRQ Score >=8) by Educational Level

	Cases Proportion (%)	Chi square χ^2	P Value	Prevalence Ratio
Education				
>=12 years	92 / 252 (36.5)			1 (ref)
<12 years	199 / 273 (72.9)	χ^2=70.08	p<0.0001	2.0 (1.6-2.3)

4.3.3.4 The Associations between Age at Marriage, Marital Satisfaction and Common Mental Disorder

Among the 304 married women there was a strong linear association between younger age at marriage and increasing prevalence of common mental disorder (Table 4.16). The association with marital dissatisfaction was so strong that the two constructs were almost indistinguishable.

Table 4.16: Prevalence of Common Mental Disorder (SRQ score >=8) by Age at Marriage and Marital Satisfaction.

	Cases Proportion (%)	Chi square χ^2	P Value	Prevalence Ratio
Age at Marriage	N=304			
27+	4 / 10 (40.0)			1 (ref)
20-26	90 / 168 (53.6)	(TFT)	df=1	1.3(0.6-2.9)
< 20 years	102/126 (81.0)	χ^2=25.55	p<0.0001	2.0(0.9-4.3)
Marital Satisfaction				
Satisfied (1–14)	5 /94 (5.3)	χ^2 = 207.88	p<0.0001	1(ref)
Dissatisfied (0 – -14)	191 / 210 (91.0)			17.1(7.2-40.1)

4.3.3.5 The Associations between Perception of Gender Disadvantage and Common Mental Disorder

Participants were asked to respond to two direct questions regarding their perception/experience of GD while growing up. Women who endorsed either item (signifying the perception of gender disadvantage) had a significantly higher prevalence of CMD (Table 4.17).

Table 4.17: Prevalence of Common Mental Disorder (SRQ Score >=8) by Perception of Gender Disadvantage

	Cases Proportion (%)	Chi square χ^2	P Value	Prevalence Ratio
Did you feel that your parents favoured your brothers or other male relatives over you?				
No	216 / 415 (52.0)			1 (ref)
Yes	75 / 110 (68.2)	$\chi^2 = 9.16$	p=0.002	1.3 (1.1-1.5)
Did you feel that your parents would have preferred you to have been a boy?				
No	129 / 308 (41.9)			1(ref)
Yes	162 / 217 (74.7)	$\chi^2 = 55.34$	p<0.0001	1.7 (1.5-2.0)

4.3.4 The Associations between Potential Confounding Variables and Common Mental Disorder

4.3.4.1 The Associations between Socio-Economic Status (SES) and Common Mental Disorder

Catchment areas were selected on the basis of prevailing SES characteristics. I have earlier reported (table 4.2) independent effects of SES (adjusting for city) upon the prevalence of CMD with higher proportions affected in Islamabad compared with Rawalpindi, and in low SES as compared with high SES neighborhoods.

In the survey, individual household socioeconomic status was assessed in terms of a) household wealth reflecting the luxury and utility items owned by the household b) household income, c) father's income (for all participants) and husband's income (for married women). For each of these indicators of socio-economic status there was a strong inverse association, with decreasing prevalence of CMD associated with increasing levels of wealth or income.

Table 4.18: Prevalence of Common Mental Disorder (SRQ Score >=8) by Household Wealth, Household Income, Father's Income for Total Sample and Husband's Income for Married Women.

	Cases Proportion (%)	Chi square (TFT)χ^2	P Value	Prevalence Ratio (95% CI)
Luxury/utility items owned by household				
1 (0-1)	96/115 (83.5)			1.9 (1.4-2.6)
2 (2-4)	108/165 (65.5)			1.6 (1.2-2.2)
3 (5-8)	47/119 (39.5)	χ^2=81.02		1.2 (0.8-1.7)
4 (9-10)	40/126 (31.7)	df=1	p<0.0001	1 (ref)
Household income PKR*				
1 (2 000-7 500)	101/126 (80.2)			1.9 (1.4-2.6)
2 (8 000- 15 000)	101/147 (68.7)			1.7 (1.3-2.4)
3 (15 500- 40000)	50/125 (40.0)	χ^2=81.31		1.2 (0.9-1.7)
4 (41 000-200 000)	39/127 (30.7)	df=1	p<0.0001	1 (ref)
Father's Income PKR				
1 (1 300-5 000)	100/125 (80.0)			1.6 (1.2-2.1)
2 (5 500-10 000)	85/149 (59.0)			1.3 (1.0-1.8)
3 (12 000- 23 000)	56/124 (45.2)	χ^2=50.46		1.1 (0.8-1.6)
4 (25 000-225 000)	50/132 (37.9)	df=1	p<0.0001	1 (ref)
Husband's Income PKR				
1 (2 000-4 500)	53/66 (80.3)			1.6 (1.1-2.3)
2 (5 000- 7 500)	60/82 (73.2)			1.5 (1.1-2.2)
3 (8 000- 19 000)	54/80 (67.5)	χ^2=27.93		1.5 (1.0-2.1)
4 (20 000-120 000)	29/76 (38.2)	df=1	p<0.0001	1 (ref)

PKR*= Pakistani Rupees (1US$=57 PKR)

4.3.4.2 The Association between Life Events and Common Mental Disorder

There was a positive linear association between number of life events and common mental disorder (Table 4.19 a).

Out of the 12 life event (LE) categories five were significantly associated with CMD (Table 4.19 b); these were experiencing a serious illness or injury (LE1), experiencing the death of a close relative (LE3), breaking off a serious relationship (LE6), being unemployed while seeking employment (LE8) and experiencing financial hardship (LE10). There was also a borderline significant association with being in trouble with the police, or making a court appearance (LE11).

Table 4.19 (a): Prevalence of Common Mental Disorder (SRQ Score >=8) by Number of Life Events Experienced in the Last One Year

Life Events	Cases Proportion (%)	Chi square χ^2	P Value	Prevalence Ratio OR
0	78/169 (46.2)	(TFT)	< 0.0001	1
1	89/172 (51.7)	$\chi^2 = 16.2$		1.1 (0.9-1.3)
2+	124/184 (67.4)	df=1		1.4 (1.2-1.7)

Table 4.19(b): Prevalence of Common Mental Disorder (SRQ Score >=8) by Exposure to Individual Life Events

		Exposed; Cases Proportion (%)	Not exposed; Cases Proportion (%)	Prevalence Ratio (95% CI)
	Life Events			
LE1	Serious injury or illness to subject.	41/50 (82.0)	250/475 (52.6)	1.6 (1.3-1.8)
LE2	Serious injury or illness to a close relative.	68/124 (54.8)	223/401 (55.6)	1.0 (0.8-1.2)
LE3	Death of immediate or extended family member	56/84 (66.7)	235/441 (53.3)	1.3 (1.0-1.5)
LE4	Death of close family friend or 2nd degree relative	87/154 (56.5)	204/371 (55.1)	1.0 (0.9-1.2)
LE5	Separation due to marital difficulties	4/8 (50.0)	287/517 (55.5)	0.9 (0.4-1.8)
LE6	Broke off a steady relationship	18/25 (72.0)	273/500 (54.6)	1.3 (1.0-1.7)
LE7	Serious problem with close friend, neighbour or relative	32/51 (62.7)	259/474 (54.6)	1.1 (0.9-1.4)
LE8	Unemployed or Seeking work for more than 1 month	39/56 (69.6)	252/469 (53.7)	1.3 (1.0-1.6)
LE9	Sacked from job	0	291/525 (55.4)	-
LE10	Major financial crisis	72/87 (82.8)	219/438 (50.0)	1.7 (1.4-1.9)
LE11	Trouble with police or court appearance	7/9 (77.8)	284/516 (55.0)	1.4 (1.0-2.0)
LE12	Something valuable lost or stolen	14/20 (70.0)	277/505 (54.9)	1.3 (0.9-1.7)

4.3.4.3 The Association between Social Support and Common Mental Disorder

Two participants did not have a confidant or any emotional support and were therefore not included in the analysis. Non-cases reported higher levels of emotional and practical support, and lower levels of negative support than did CMD cases Table 4.20. Non-cases also reported more extensive social networks outside of home although this difference did not quite reach statistical significance. There was a higher prevalence of CMD among women reporting greater degrees of isolation and among women living with only one adult compared with those living with two or more adults.

Table 4.20: Close Person Questionnaire Social Support Scale Scores by Common Mental Disorder Caseness (SRQ Score >=8)

N=523	Cases Total=289	Non Cases Total=234	Mean Diff	95% CI	p Value
Confiding/emotional support					
Mean (SD)	22.7 (3.7)	25.8 (4.2)	3.1	2.4 – 3.8	<0.0001
Practical Support					
Mean (SD)	7.7 (2.1)	9.0 (2.0)	1.2	0.8 – 1.5	<0.0001
Negative aspects of support					
Mean (SD)	8.6 (1.8)	7.3 (1.9)	-1.2	(-0.9 to -1.5)	<0.0001
Social Network Beyond Household (n=525)					
Mean (SD)	7.8 (3.5)	8.4 (3.5)	0.6	(0.0-1.2)	0.07

Table 4.21: Prevalence of Common Mental Disorder (SRQ Score >=8) by Close Person Questionnaire Social Network

	Cases Proportion (%)	Chi squared test	Prevalence ratio (95% CI)
Isolation scale			
0	0/ 4 (0%)	χ^2 = 5.87	
1	15/ 32 (46.9%)	df=1	1 (ref)
2	88/ 170 (51.8%)	p=0.015	1.2 (0.7-1.7)
3	121/ 207 (58.5%)		1.2 (0.7-1.8)
4	56/ 97 (57.7%)		1.2 (0.7-1.8)
5	11/ 15 (73.3%)		1.3 (0.7-2.5)
Household Composition			
Sharing with 1 adult	86/ 125 (68.8%)	χ^2 = 11.87	1 (ref)
Sharing with more than one adult	205/ 400 (51.3%)	p=0.001	0.8 (0.7-1.0)

4.3.4.4 The Association between Emancipation and Common Mental Disorder

The prevalence of CMD increases with decreasing levels of reported emancipation. The test for linear trend is statistically significant.

Table 4.22: Prevalence of Common Mental Disorder (SRQ Score >=8) by Emancipation Scale Score

	N=291				
Level of emancipation	Cases Proportion (%)	Chi square χ^2	P Value	Prevalence Ratio	95% CI
0	67/142 (69.1)	(TFT)χ^2=51.54	p<0.0001	3.4	2.1-5.3
1	96/142 (67.6)	df=1		3.3	2.1-5.1
2	68/112 (60.7)			3.0	1.9-4.7
3	43/90 (47.8)			2.3	1.4-3.8
4	17/84 (20.2)			1 (ref)	

4.3.4.5 Associations between Fertility and Common Mental Disorder (Among Married Women)

304/525 (57.9%) women were married. These women were asked the interval between marriage and their first live birth, the number of children and their gender distribution, and if they had ever had an abortion (either spontaneous or induced).

4.3.4.5.1 Interval between Marriage and Birth of First Child

For women with no children there was no association between the duration of their marriage and the prevalence of CMD. For those who had had children there was a non significant trend for an increasing prevalence of CMD with increasing interval of time between marriage and birth of first child.

4.3.4.5.2 Numbers, and Gender of Children

There was a statistically significant linear trend for an increasing prevalence of CMD with increasing numbers of children, although the prevalence of CMD was higher for those with no children than for those with one child. The gender of the children was not associated with prevalence of common mental disorder.

4.3.4.5.3 Abortions

The trend for a higher prevalence of CMD among women who had experienced three or more miscarriages was not statistically significant.

Table 4.23a: Prevalence of Common Mental Disorder (SRQ Score >=8) by Interval between Marriage and Birth of First Child.

Married women **N=304**	**Cases Proportion (%)**	**Chi square χ^2 (TFT)**	**P Value**	**Prevalence Ratio**
Women with no children **(n=46)**				
Duration of marriage				
<=3 years	18/31 (58.1)	$\chi^2 = 0.30$	0.579	1 (ref)
>3 years	10/15 (66.7)	df=1		1.1 (0.6-2.0)
Women with children **(n=258)**				
Interval between marriage and birth of 1st child				
<=2 years	90/146 (61.6)	$\chi^2 = 2.08$	0.149	1 (ref)
3-5 Years	58/85 (68.2)	df=1		1.1 (0.8-1.4)
6 or more years	20/27 (74.1)			1.1 (0.8-1.6)

Table 4.23b: Prevalence of Common Mental Disorder (SRQ Score >=8) by Number of Children, Number of Abortions and Gender of Children.

	Cases Proportion (%)	Chi square χ^2	P Value	Prevalence Ratio
Number of children (n=304)				
0	28 / 46 (60.9)	(TFT)χ^2=9.55	P=0.002	1 (ref)
1	22 / 49 (44.9)	df=1		0.8 (0.5-1.3)
2	42 / 69 (60.9)			1.0 (0.7-1.5)
3	43 / 60 (71.7)			1.1 (0.8-1.6)
4+	61 / 80 (76.3)			1.1 (0.8-1.6)
Number of abortions (n=304)				
0	72 / 109 (66.1)	χ^2=1.57	P=0.209	1 (ref)
1	72 / 127 (56.7)	df=1		0.9 (0.7-1.2)
2	37 / 49 (75.5)			1.1 (0.8-1.5)
3+	15 / 19 (78.9)			1.1 (0.7-1.7)
Gender of offspring (n=258)				
Only sons	26/47 (55.3)	(TFT)χ^2=0.55	P=0.458	1 (ref)
Both son(s) and daughter(s)	115/157 (73.2)	df=1		1.2 (0.9-1.7)
Only daughters	27/54 (50.0)			0.9 (0.6-1.5)

4.3.5 Summary – Univariate Analyses

Women with common mental disorder reported considerably greater degrees of disability than did women without common mental disorder.

Older age, being married and not being employed outside of the home were associated with common mental disorder.

Of the gender disadvantage indicators, lower levels of care, higher levels of overprotection, lower educational attainment, younger age at marriage and marital dissatisfaction were associated with common mental disorder. Perception of gender disadvantage (parents favoritism towards brothers or male relatives, and parents preference for the participant to have been a boy), was also associated with CMD. Only birth order was not associated with likelihood of common mental disorder.

Among the potential confounding variables, lower income, less wealth, more life events, less social support, more limited social networks, and lesser degrees of emancipation were all positively associated with common mental disorder. Among married women, increasing parity was linearly associated with CMD prevalence.

4.4 Association between Gender Disadvantage (GD) Indicators

The indicators of gender disadvantage could be considered to obtain or refer to different stages in the early life course of the participant, forming a chain of causation across the

life course. Gender disadvantage, I hypothesized, starts at birth, and birth order may be a proxy indicator. Thus, girls born at a time when there were no brothers, and with no brothers born within three years would be more likely to experience disadvantage. Disadvantage from birth may then lead to less care, and/ or overprotection. Later in the life course, disadvantaged women would receive less education, would be married early and less favourably, leading in turn to lower marital satisfaction. In this section I test this model by estimating the following associations

a) birth order with care/overprotection, education, age at marriage and marital satisfaction
b) care/overprotection with education, age at marriage and marital satisfaction
c) education with age at marriage and marital satisfaction
d) age at marriage with marital satisfaction

The two indicators derived from women's overall perception of gender disadvantage, I hypothesized, would summarise the experience of disadvantage across the life course, and would be associated with each of the indicators listed above.

4.4.1 Associations between Birth Order and Other Gender Disadvantage Indicators

Women who had an older brother were more likely to have received less education. However, contrary to the hypothesized direction of the effect of birth order I found that women who had an older brother were most overprotected, and were most likely to have been married at an earlier age. Care and marital satisfaction did not exhibit any linear association with sibship.

Table 4.24: Birth Order And its Association with Care, Overprotection, Education, Age at Marriage and Marital Satisfaction

Birth order	Care Mean (SD)	Overprotection Mean (SD)	Education N (%) < 12 yrs	Age at marriage N (%) < 20 years	Marital Dissatisfaction N (%) dissatisfied
Has brother					
Older brother	13.2 (3.7)	19.4 (4.9)	187 / 320 (58.4)	91 / 201 (45.3)	139 /201 (69.2)
Younger brother within 3 yrs	13.6 (3.8)	18.9 (4.8)	32 / 72 (44.4)	14 /39 (35.9)	28 /39 (71.8)
Younger brother below 3 yrs	14.3 (3.9)	18.1 (4.4)	36 / 84 (42.9)	17 /47 (36.2)	30 /47 (63.8)
Lacks brother					
Only child	13.1 (3.6)	20.9 (3.9)	5 / 10 (50.0)	3 /6 (50.0)	5 /6 (83.3)
No brother eldest daughter	13.6 (3.8)	17.6 (4.2)	7 / 13 (53.8)	1 /5 (20.0)	4 /5 (80.0)
No brother 2nd or 3rd daughter	12.7 (3.7)	17.6 (4.0)	6/ 26 (23.1)	0/6 (0.0)	4 /6 (66.7)
	ANOVA F = 0.333 p= 0.564	ANOVA F = 5.94 p= 0.015	χ^2 = 13.93 df=1 p<0.0001	χ^2 = 5.40 df=1 p=0.020	χ^2 = 0.00 df=1 p=0.987

4.4.2 Associations between Care and Overprotection and other GD Indicators

There was a strong positive association between care received and education, age at marriage, and marital satisfaction. Women reporting higher levels of care from mothers also had more years of education, were less likely to get married before the age of 20, and were more likely to be satisfied in their marriage.

Overprotection had a strong inverse association with the other GD indicators. Women who experienced more overprotection were more likely to have fewer years of education compared to those who did not. They got married at an earlier age and were less satisfied in their marriage.

Table 4.25: Care and Overprotection Mean Scores by Education, Age at Marriage and Marital Satisfaction

	Care Mean (SD)	Mean Difference (95% CI)	P value	Overprotection Mean (SD)	Mean Difference (95% CI)	P value
Education (n=525)						
<12 years (n=273)	11.8 (3.0)	3.4	<0.0001	21.4 (4.1)	5.0	<0.0001
>=12 years (n=252)	15.2 (3.7)	(2.8-4.0)		16.4 (4.0)	(4.3-5.7)	
Age at Marriage (n=304)						
<20 yrs (n=126)	11.2 (2.4)	3.0	<0.0001	22.8 (3.1)	4.9	<0.0001
>20 yrs (n=178)	14.2 (4.0)	(2.3-3.7)		17.9 (4.4)	(4.0-5.7)	
Marital satisfaction (n=304)						
Satisfied (n=94)	15.8 (3.3)	4.1	<0.0001	16.7 (3.6)	4.6	<0.0001
Dissatisfied (n=210)	11.6 (3.1)	(3.3-4.9)		21.3 (4.3)	(3.6-5.6)	

4.4.3 Association between Education and other GD Indicators

Educational attainment was the third GD indicator; it was strongly associated with the remaining, more distal GD indicators. None of the women who had more than twelve years education had married before the age of 20 years. Those having less than 12 years of education were more likely to be dissatisfied in their marriage, than those with more education.

Table 4.26: Association, Among Married Women (N=304), between Education, Age at Marriage and Marital Satisfaction

Years of education	Outcome	Chi square	P value
	Age at Marriage N (%) <20 years		
<12 years	126/197 (64.0)	χ^2 = 116.88	<0.0001
>= 12 years	0/ 107 (0.0)	df=1	
	Marital satisfaction N (%) dissatisfied		
<12 years	153/197 (77.7)	χ^2 = 19.31	<0.0001
>= 12 years	57/107 (53.3)	df=1	

4.4.4 Association between Age at Marriage and Marital Satisfaction

Finally, I examined the association between age at marriage and marital satisfaction, and found a strong positive association. For those who married before the age of 20 years, 104/126 (82.5%) were dissatisfied with their marriage compared with 106/178 (59.6%) of those who married later; $\chi^2 = 18.25$, $p<0.0001$.

4.4.5 Associations between Summary Measures of Perception of GD, and Other GD Indicators

The two summary questions addressing the perception of the participants were 1) Did you feel that your parents would have preferred you to have been a boy and 2) Did you feel that your parents favoured your brothers or other male relatives over you?

Perception that their parents would have preferred them to have been a boy was associated with all six GD indicators. There was a linear trend with birth order; those women with a less favourable birth order were more likely to feel that their parents would have preferred them to have been a boy. Women who perceived themselves, to be disadvantaged in this way reported lower levels of care and higher levels of overprotection. Women with less than 12 years education, those who had married before the age of 20, and those dissatisfied with their marriage were more likely to perceive themselves to have been disadvantaged.

Perception of favoritism towards brothers or other male relatives was associated with four of the six GD indicators; there was no association with participant's birth order or their level of marital satisfaction. Those who felt themselves to be disadvantaged in this way did however show lower care and more overprotection. Women with less than 12 years of education, and those who had married before the age of 20 were more likely to perceive themselves to have been disadvantaged.

Table 4.27a : Prevalence of Perceived Gender Disadvantage ('Did You Feel That Your Parents Would Have Preferred You to Have Been a Boy?') by Other Gender Disadvantage Indicators

	N (%) answering 'yes'	Chi square χ^2	P value
Birth order			
Older brother	126/320 (39.4)	TFTχ^2 =4.97	0.026
Younger brother within 3 yrs	30/72 (41.7)	df=1	
Younger brother below 3 yrs	31/84 (36.9)		
Only child	7/10 (70.0)		
No brother eldest daughter	7/13 (53.8)		
No brother 2nd or 3rd daughter	16/26 (61.5)		
Education			
<12 years	147 /273 (53.8)	χ^2 = 36.72	<0.0001
>=12 years	70/252 (27.8)		
Age at Marriage (n=304)			
<20 years	70 /126 (55.6)	χ^2 = 9.56	0.002
>20 years	67/178 (37.6)		
Marital satisfaction (n=304)			
Satisfied	28/94 (29.8)		
Dissatisfied	109 /210 (51.9)	χ^2 = 12.83	<0.0001

Table 4.27 b: Mean Score for Care and Overprotection According to Response to 'Did You Feel That Your Parents Would Have Preferred You to Have Been a Boy?'

	Yes	No	P Value
Care			
Mean (SD)	12.0 (3.0)	14.4 (3.9)	<0.0001
Overprotection			
Mean (SD)	20.9 (4.3)	17.7 (4.6)	<0.0001

Table 4.27 c: Prevalence of Perceived Gender Disadvantage ('Did You Feel That Your Parents Would Have Preferred You to Have Been a Boy?') by Other Gender Disadvantage Indicators

	N (%) answering 'yes'	Chi square χ^2	P value
Birth order			
Older brother	68/320 (21.3)	(TFT)χ^2 =0.42	0.513
Younger brother within 3 yrs	11/72 (15.3)	Df=1	
Younger brother below 3 yrs	20/84 (23.8)		
Only child	0/10 (0.0)		
No brother eldest daughter	3/13 (23.1)		
No brother 2nd or 3rd daughter	8/26 (30.8)		
Education			
<12 years	76 /273 (27.8)		
>=12 years	34/252 (13.5)	χ^2 = 16.28	<0.0001
Age at Marriage (n=304)			
<20 years	38 /126 (30.2)	χ^2 = 8.25	0.004
>20 years	29/178 (16.3)		
Marital satisfaction (n=304)			
Satisfied	15/94 (16.0)	χ^2 = 2.93	0.087
Dissatisfied	52 /210 (24.8)		

Table 4.27 d: Mean Score for Care and Overprotection According to Response to 'Did You Feel That Your Parents Would Have Preferred You to Have Been a Boy?'

	Yes	No	P Value
Care			
Mean (SD)	12.3 (2.9)	13.7 (3.9)	p<0.0001
Overprotection			
Mean (SD)	21.2 (3.7)	18.4 (4.8)	p<0.0001

4.4.6 Summary – Associations between GD Indicators

Of the four hypothesized chains of association between GD indicators

a) birth order with care/overprotection, education, age at marriage and marital satisfaction

b) care/overprotection with education, age at marriage and marital satisfaction

c) education with age at marriage and marital satisfaction

d) age at marriage with marital satisfaction

there was strong support for b), c) and d). However, for birth order, there were no associations with care, and marital satisfaction, and associations with age at marriage and overprotection were in the opposite direction to that hypothesized. Women with less favourable birth order were less likely to have received more than 12 years of education.

The first summary measure of perception of gender disadvantage, ('Did you feel that your parents would have preferred you to have been a boy?') was robustly associated with all six GD indicators; birth order, care, overprotection, education, age at marriage

and marital satisfaction; in the direction hypothesized. However, the second summary measure ('Did you feel that your parents favored your brothers or other male relatives over you?') was not associated with birth order and marital satisfaction.

4.5 Gender Disadvantage and Its Association with Potential Confounders

A confounder is independently associated with the hypothesized risk factor and the outcome. I have already reported (4.3.4) the associations between potential confounders and the outcome of common mental disorder. In this section, I present estimates of the associations with hypothesized risk factors (gender disadvantage). It would be cumbersome to explore associations between all potential confounders with each of the eight GD indicators. The single indicator of perception of GD 'Did you feel that your parents would have preferred you to have been a boy?' was significantly and robustly associated with all of the other GD indicators on the hypothesized life course pathway. I therefore selected this summary GD indicator to test for associations between potential confounding variables and GD as a risk factor.

4.5.1 Demographic Variables

Women who were married, not employed outside of the home, and those who were residing in joint family system were all significantly more likely to perceive GD, compared to their counterparts; details in table 4.28

Table 4.28: Prevalence of Perception of GD ('Did You Ever Feel That Your Parents Would Have Preferred You to Have Been a Boy?') by Demographic Variables.

	Proportion (%) answering 'yes'	Chi Square	p-value
Marital Status			
Single	80/ 221 (36.2)	$\chi^2 = 4.14$	0.042
Married	137/ 304 (45.1)		
Employed outside home			
Yes	28 /104 (26.9)	$\chi^2 = 4.14$	0.001
No	189/ 421 (44.9)		
Age			
< 27 years	124/ 307 (40.4)	$\chi^2 = 0.27$	0.603
27 or > years	93/ 218 (42.7)		
Family System			
Joint	108/233 (46.4)	$\chi^2 = 4.35$	0.037
Nuclear	109/292 (37.3)		

4.5.2 GD and Socioeconomic Status

Socioeconomic status was examined using four indicators; the overall wealth (ownership of luxury/ utility items), household income, income of the father (for both single and married women), and income of the husband (for married women). Since SES is hypothesized to be a key potential confounding variable, I examined the relationship between GD and SES for all four measures. Table 4.29 has details.

I had previously reported independent effects of city and SES upon the perception of gender disadvantage, with higher proportions affected in Rawalpindi compared with Islamabad, and in low SES as compared with high SES neighborhoods (Table 4.4). Each of the other indicators of household wealth and household or personal income was strongly and significantly inversely associated with perception of gender disadvantage.

Table 4.29: Prevalence of Perception of GD ('Did You Ever Feel That Your Parents Would Have Preferred You to Have Been a Boy?') by Socioeconomic Indicators; Wealth, Average Income, Father's Income and Husbands Income (for the Married Women)

	Proportion (%) answering 'yes'	Chi square χ^2 (TFT)	P Value
Overall Wealth*			
1 (0-1)	62/115 (53.9)		
2 (2-4)	88/165 (53.3)		
3 (5-8)	39/119 (32.8)	χ^2=35.58	<0.0001
4 (9-10)	28/126 (22.2)	df=1	
Average income PKR			
1 (2 000-7 500)	71/126 (56.3)		
2 (8 000- 15 000)	85/147 (57.8)		
3 (15 500- 40000)	25/125 (20.0)	χ^2=39.88	<0.0001
4 (41 000-200 000)	36/127 (28.3)	df=1	
Father's Income PKR**			
1 (1 300-5 000)	73/125 (58.4)		
2 (5 500-10 000)	65/144 (45.1)		
3 (12 000- 23 000)	39/124 (31.5)	χ^2=25.08	<0.0001
4 (25 000-225 000)	40/132 (30.3)	df=1	
Husbands Income PKR (n=304)			
1 (2 000-4 500)	33/66 (50.0)		
2 (5 000- 7 500)	46/82 (56.1)		
3 (8 000- 19 000)	38/80 (47.5)	χ^2=9.95	0.002
4 (20 000-120 000)	20/76 (26.3)	df=1	

*Luxury/utility items owned by household **57 Pakistani Rupees = 1US$

4.5.3 Life Events

With a significant linear trend, the prevalence of perceived GD increased incrementally with numbers of life events.

Table 4.30: Prevalence of Perception of GD ('Did You Ever Feel That Your Parents Would Have Preferred You to Have Been a Boy?') by Life Events

	Proportion (%) answering 'yes'	Chi square (TFT) χ^2	P Value
	N %		
Number of Life Events			
0	54/ 169 (32.0)		
1	68 / 172 (39.5)	$\chi^2 = 14.13$	0.001
2 or more	95 /184 (51.6)	df=1	

4.5.4 Social Support

Women who perceived gender disadvantage reported lower levels of confidant / social support and practical support, and higher levels of negative support, compared to others. Neither social network, nor household composition, nor isolation were associated with perception of gender disadvantage. Details in Table 4.31 (a) (b).

Table 4.31 a: Social Support Mean Score by Perception of GD ('Did You Ever Feel That Your Parents Would Have Preferred You to Have Been a Boy?')

	Yes	No		
	Mean (SD)	Mean (SD)	Mean diff	P Value
Confiding/emotional	23.3 (4.2)	24.6 (4.1)	1.3 (0.6 to 2.1)	<0.0001
Practical Support	8.0 (2.2)	8.5 (2.1)	0.5 (0.1 to 0.9)	0.013
Negative aspects of support	8.2 (1.9)	7.8 (1.9)	-0.4 (-0.8 to -0.0)	0.022
Network beyond Household	8.1(3.5)	8.1 (3.6)	0.0 (-0.6 to 0.6)	0.975

Table 4.31 b: Prevalence of Perception of GD ('Did You Ever Feel That Your Parents Would Have Preferred You to Have Been a Boy?') Level of Isolation and Household Composition

	Proportion (%) answering 'yes'	**Chi square χ^2**	**P Value**
Isolation			
0	0/0 (0.0)	TFT χ^2=0.239	p=0.625
1	8/32 (25.0)	df=1	
2	78/170(45.9)		
3	87/207(42.0)		
4	38/97(39.2)		
5	6/15(40.0)		
Household			
Composition			
1 Adult	57/125(45.6)	χ^2=1.23	P=0.267
> 1 Adult	160/400(40.0)		

4.5.5 Emancipation

Women with lower emancipation scores were significantly more likely to report that their parents would have preferred them to have been a boy.

Table 4.32: Prevalence of Perception of GD ('Did You Ever Feel That Your Parents Would Have Preferred You to Have Been A Boy?') by Emancipation Scale Score

	Proportion (%) answering 'yes'	Chi square χ^2	P Value
0	53/97 (54.6)	(TFT)χ^2=37.50	0.0001
1	73/142 (51.4)	df=1	
2	48/112 (42.9)		
3	32/90 (35.6)		
4	11/84 (13.1)		

4.5.5.1 Fertility

There were no statistically significant associations between any of the fertility indicators; interval between marriage and birth of first child, number of children, number of abortions, gender of children; and perception of gender disadvantage (Table 4.33). However, there was a non-significant trend for an increasing perception of GD with increasing interval between marriage and birth of 1st child.

Table 4.33 : Prevalence of Perception Of GD ('Did You Ever Feel That Your Parents Would Have Preferred You to Have Been a Boy?') by Interval Between Marriage and Birth of First Child, Number and Gender of Children

	Proportion (%) answering 'yes'	Chi square	P Value
Women with no children (n=46)			
Duration of marriage			
<=3 years	15/31 (48.4)	$\chi^2 = 0.54$	p=0.460
>3 years	9/15 (60.0)		
Interval between marriage and birth of 1st child (n=258)			
<=2 years	61/146 (41.8)	(TFT)	p=0.091
3-5 Years	34/85 (40.0)	χ^2=2.85	
6 or more years	18/27 (66.7)	DF=1	
Number of Children (n=304)			
0	24 / 46 (52.2)	(TFT)	p=0.895
1	23 / 49 (46.9)	χ=0.017	
2	24 / 69 (34.8)	DF=1	
3	27 / 60 (45.0)		
4+	39 / 80 (48.8)		
Gender of offspring (n=258)			
Daughters only	26/54 (48.1)	$\chi^2 = 0.789$	p=0.852
Son(s) and daughter(s)	67/157 (42.7)		
Sons only	20/47 (42.6)		
Number of abortions			
0	50 / 109 (45.9)	(TFT)χ^2=1.70	p=0.192
1	50 / 127 (39.4)		
2+	37 / 68 (54.4)		

4.5.5.2 Summary – Associations between Gender Disadvantage and Potential Confounding Variables

Perception of gender disadvantage (the risk factor) was positively associated with living in Rawalpindi, with being married, with not being employed outside of the home, with less wealth and lower incomes, with experiencing more life events, with lower levels of social support, and with lower levels of emancipation.

Each of these potential confounding variables has previously been shown to be associated with common mental disorder (the outcome), although the association with city was in the opposite direction, with a higher prevalence of CMD recorded in Islamabad (Table 4.2). To test for the independent effect of gender disadvantage upon common mental disorder, I will therefore need to adjust for city of residence, marital status, employment outside of home, socio-economic status, life events, social support and emancipation.

Table 4.34: Potential Confounders – Patterns of Association With Common Mental Disorder (CMD) and Gender Disadvantage (GD)

	Association with CMD	**Association with GD**
Older age	+	0
Joint vs. nuclear family system	0	+
Married vs. single	+	+
Not employed vs. employed	+	+
More life events	+	+
Less social support	+	+
More isolation	+	-
Limited social networks	+	0
Islamabad vs. Rawalpindi	+	-
Low SES (catchment area)	+	+
Lower income	+	+
Less wealth	+	+
Less emancipation	+	+
Number of abortions*	0	0
Interval between marriage and birth of 1st child*	0	0
More children *	+	0
Gender of children*	0	0

Key

+ Positive association
- Negative association
0 No statistically significant association
* Assessed in married women only

4.6 Stratified Analyses

The stratified analyses were carried out in order to explore the role of all possible confounders and effect modifiers for the association between perception of gender disadvantage and CMD. As for the previous section the question 'did you feel that your parents would have preferred you to have been a boy' was selected as the risk factor, as an effective summary GD indicator. The association between perception of gender disadvantage and CMD was stratified for each of the potential confounders - city of residence, marital status, socio-economic status indicators, life events, social support and emancipation. In each case the stratifying variable was dichotomized. I tested for effect modification with a test for homogeneity of odds between strata. A Mantel Haenszel summary odds ratio was calculated as an estimate of the association between perception of gender disadvantage and common mental disorder, adjusting for the stratifying variable.

Previous researchers have proposed socioeconomic status as a mediator or confounder for the strong effect of female gender on prevalence of common mental disorder in Pakistan. The analyses carried out in the earlier sections of this study demonstrated that SES had a strong independent effect on the GD indicators as well as CMD. It therefore seemed appropriate to examine the association between each of the main GD indicators (care/overprotection, level of education, age at marriage and marital satisfaction, as well as the second question addressing perception of GD; 'did you feel that your parents favored your brothers or other male relatives over you') and CMD, by stratifying for residence in a low or high socioeconomic status catchment area, to test for confounding

and effect modification of the association between each of the GD indicators and common mental disorder. Birth order was not included since it did not demonstrate a univariate association with CMD in the earlier analyses.

4.6.1 Effect Modification

The effect size (OR) for the association between perception of gender disadvantage and common mental disorder was larger in younger than older women, in residents of Rawalpindi, and in higher SES groups, but in each case there was no statistically significant effect modification (Tables 4.35 a). The association was not modified by other demographic variables, life events, or social support. Level of emancipation was the only statistically significant effect modifier, with the effect size (OR) for the association between gender perception and common mental disorder being much larger among more emancipated women.

4.6.2 Potential Confounders

Stratified analyses revealed that high/ low SES catchment area residence, household wealth and income, (all highly correlated measures of SES) could be negative confounders accounting for some, but not all of the association between perception of GD and CMD (Tables 4.35 a).

Associations Between Other GD Indicators and Common Mental Disorder, Stratified by High/ Low SES Catchment Area

After stratifying by SES, there was significant effect modification for care and overprotection (Table 4.35c). The effect size (OR) for the association between low care (bottom quarter of the distribution vs. top three quarters) and common mental disorder was larger in high SES districts, and for high overprotection (top fifths versus the lowest four fifths) the opposite was true, with a larger effect size among low SES district residents. The associations between both education and age at marriage and common mental disorder were substantially confounded or mediated by SES. The association with age at marriage was no longer statistically significant after adjusting for SES district. The effect size for the second summary indicator of perception of gender disadvantage ('Did you feel that your parents favored your brothers or other male relatives over you?') was again larger in high SES districts, but with no significant effect modification. After adjusting for SES, the effect of perception of GD, measured in this way, was no longer statistically significant.

Table 4.35 a: Association between Perception of GD and CMD Stratified for Potential Confounders

Stratification variable Crude odds ratio (95% CI)	**Stratum I**	**Stratum II**	**Test for homogeneity P Value**	**Mantel Haenszel adjusted odds ratio**
Age 4.1 (2.8-6.0)	**< =27 Years** 5.5 (3.3-9.1)	**> 27 years** 2.7 (1.5-4.9)	0.072	4.1 (2.8-6.0)
Marital Status 4.1 (2.8-6.0)	**Married** 3.6 (2.1-6.0)	**Single** 4.6 (2.6-8.3)	0.519	4.0 (2.7-5.9)
Employment 4.1 (2.8-6.0)	**No** 4.3 (2.8-6.6)	**Yes** 2.4 (1.0-5.7)	0.226	3.9 (2.6-5.7)
City (catchment area) 4.1 (2.8-6.0)	**Islamabad** 3.8 (2.1-7.0)	**Rawalpindi** 6.2 (3.6-10.8)	0.234	4.9 (3.2-7.3)
SES (catchment area) 4.1 (2.8-6.0)	**Low SES** 2.6 (1.5-4.4)	**High SES** 3.4 (1.9-6.1)	0.514	2.9 (1.9-4.3)
Wealth 4.1 (2.8-6.0)	**0-4** 2.4 (1.4-4.1)	**5-10** 4.5 (2.5-8.2)	0.112	3.1 (2.1-4.7)
Income 4.1 (2.8-6.0)	**<16000 Rs** 2.5 (1.5-4.4)	**>=16 000 Rs** 3.4 (1.9-6.2)	0.466	2.9 (1.9-4.3)

Table 4.35 b: Association between Perception of GD and CMD Stratified for Potential Confounders.

Stratification variable Crude odds ratio (95% CI)	**Stratum I**	**Stratum II**	**Test for homogeneity P Value**	**Mantel Haenszel adjusted odds ratio**
Negative support	**<=8**	**> 8**		
4.1 (2.8-6.0)	4.2 (2.5-6.9)	3.6 (1.9-6.8)	0.715	3.9 (2.6-5.8)
Confiding/Emotional support	**< = 24**	**> 25**		
4.1 (2.8-6.0)	5.0 (2.7-8.9)	3.1 (1.8-5.4)	0.269	3.9 (2.6-5.8)
Practical Support	**<=8**	**> 8**		
4.1 (2.8-6.0)	4.0 (2.2-6.8)	4.2 (2.4-7.2)	0.875	4.0 (2.7-6.0)
Life Events	**0**	**>=1**		
4.1 (2.8-6.0)	2.4 (1.3-4.7)	4.9 (3.1-7.9)	0.091	3.9 (2.7-5.7)
Emancipation	**<=1**	**2 or >**		
4.1 (2.8-6.0)	2.4 (1.4-4.1)	5.2 (3.0-9.0)	0.047	3.6 (2.4-5.3)

Table 4.35 c: Four GD Indicators, and One Summary Question for Perception of GD Stratified for SES

	Crude Odds	Low SES	High SES	Test for homogeneity P Value	Mantel Haenszel adjusted odds ratio (95% CI)
Care (bottom quarter)	5.6 (3.4-9.1)	2.5 (1.4-4.7)	9.1 (3.7-22.1)	0.019	3.9 (2.3-6.4)
Overprotection (dichotomized)	13.6 (8.8-20.8)	24.0 (11.3-50.8)	5.1 (2.4-10.8)	0.004	10.7 (6.4-18.0)
Education (<12 years)	4.7 (3.2-6.8)	3.7 (2.0-7.0)	1.7 (0.9-3.2)	0.088	2.5 (1.6-4.0)
Age at marriage (<20 years)	3.8 (2.2-6.4)	1.7 (0.8-3.7)	1.3 (0.1-9.2)	0.759	1.7 (0.8-3.4)
Marital satisfaction	179.0 (64.7-494.6)	293.6 (58.1-1484.0)	88.5 (23.7-330.6)	0.252	133.7 (47.5-376.6)
Perception of GD*	2.0 (1.3-3.1)	1.0 (0.8-2.0)	2.1 (0.9-4.9)	0.123	1.2 (0.8-2.0)

*** 'Did you feel that your parents favored your brothers or other male relatives over you?'**

4.6.3 Controlling for Confounding

The association between CMD and the main gender disadvantage measures, care/overprotection, educational attainment, age at marriage, marital satisfaction, and the second summary measure addressing perceived favoritism by parents for brothers or male relatives, were each adjusted for other variables known to be associated with both GD and CMD. As indicated in the stratified analyses socioeconomic status SES (based on place of residence) was modifying the effect for care / overprotection but not for other GD indicators. Therefore, the models generated for these scores were presented separately for low and high SES catchment areas. In each case the first set of variables entered in the logistic regression model were marital status and employment outside of home (Model 2). The odds ratio for the association between CMD and GD is then incrementally adjusted for life events, social support (Model 3), city of residence (Model 4), socioeconomic status represented by the overall wealth (Model 5), and finally for emancipation (Model 6).

As presented in table 4.35 a, household wealth, household income and socioeconomic status by area of residence were all potential confounders. However, they were highly correlated, and colinearity would have occurred if they were included in a model together, rendering such models unstable and unreliable. Household wealth was selected to control for SES, as there was variance within each SES district, with overlap, hence it was possible still to adjust for wealth in the analyses of the effects of care and overprotection, which were carried out in separate models for low and high SES areas because of the previously demonstrated effect modification.

4.6.3.1 Adjusting for Confounders for Care/Overprotection

The care subscale scores were dichotomized into lowest quarter versus the highest three quarters (dichotomizing at the 20th percentile was not feasible). The overprotection scores were dichotomized into the top fifths vs. the lowest four fifths.

As suggested in the stratified analysis, SES catchment area modified the effect for low care and high overprotection. For care the effect was much stronger in high SES, the opposite was true for overprotection.

The association between low care and common mental disorder was marginally weakened by marital status and employment. Otherwise, there was no evidence for substantial confounding. The fully adjusted odds ratios were 1.9 (0.9-3.8) in the low SES catchment areas, and 8.9 (3.4-23.3) in the high SES catchment areas.

The association between high overprotection and common mental disorder was again slightly attenuated after adjusting for marital status and employment. In high SES catchment areas there was some evidence for further confounding by wealth. The fully adjusted odds ratios were 12.1 (4.5-32.2) in the low SES catchment areas, and 2.3 (0.4-14.4) in the high SES catchment areas.

In summary, after adjusting for all confounders, there was evidence for a significant association between low care and common mental disorder in high SES catchment areas, and a borderline significant association in low SES catchment areas. There was evidence for a significant association between high overprotection and common mental disorder in low SES, but not high SES catchment areas.

We also carried out a multivariate analysis using the entire sample fitting a model with the main effects of care and SES, together with the interaction between these two variables. The findings were unaltered. The additional information available from this model is that the interaction between care and SES remains statistically significant after adjusting for potential confounders; indeed the interaction term becomes marginally stronger after adjusting for life events, social support and isolation.

Having repeated the same process for overprotection, again the estimates of the effect of overprotection in each SES stratum were unaltered from those generated in the stratified analysis. However, in this instance the SES x overprotection interaction term was not statistically significant.

Table 4.36: The Association, In Low and High SES Catchment Areas, between Low Care (Bottom Quarter) and Common Mental Disorder, Adjusted Incrementally for Potential Confounding Variables

	Low SES catchment areas	High SES catchment areas	Care*SES	Care scores for the total sample
Model 1	2.5	9.0	3.5 (1.2-10.6)	5.6 (3.4-9.1)
Model 2	2.3	8.7	3.8 (1.3-11.3)	5.0 (3.0-8.3)
Model 3	2.0	11.4	5.7 (1.8-18.2)	4.7 (2.8-8.0)
Model 4	2.0	10.2	5.1 (1.6-16.3)	4.4 (2.6-7.5)
Model 5	1.9	9.5	5.0 (1.5-15.7)	3.8 (2.2-6.6)
Model 6	1.9	9.3	4.9 (1.5-15.7)	3.8 (2.2-6.6)

Model 1 – Main effect of care

Model 2 – Main effect of care, adjusted for marital status and employment outside of the home

Model 3 – Main effect of care, adjusted for marital status, employment outside of the home, and life events, social support

Model 4 - Main effect of care, adjusted for marital status, employment outside of the home, life events, social support and city

Model 5 - Main effect of care, adjusted for marital status and employment outside of the home, life events, social support, city and wealth

Model 6 - Main effect of care, adjusted for marital status and employment outside of the home, life events, social support, city, wealth and emancipation

Table 4.37: The Association, In Low and High SES Catchment Areas, Between High Overprotection (Top Fifth) and Common Mental Disorder, Adjusted Incrementally for Potential Confounding Variables

	Low SES catchment areas	High SES catchment areas	Overprotection*SES	Overprotection scores for the total sample
Model 1	11.8	3.7	3.2 (0.5-22.2)	17.1 (8.1-36.0)
Model 2	10.8	2.7	4.0 (0.6-28.0)	15.0 (7.0-31.6)
Model 3	11.0	3.3	3.3 (0.4-25.0)	13.0 (6.1-28.0)
Model 4	11.4	3.8	3.0 (0.4-22.3)	13.7 (6.3-30.0)
Model 5	12.0	3.0	4.0 (0.5-30.7)	10.0 (5.0-22.1)
Model 6	12.0	3.0	4.0 (0.5-30.6)	10.2 (5.0-23.0)

Model 1 – Main effect of overprotection

Model 2 – Main effect of overprotection, adjusted for marital status and employment outside of the home

Model 3 – Main effect of overprotection, adjusted for marital status, employment outside of the home, and life events, social support

Model 4 - Main effect of overprotection, adjusted for marital status, employment outside of the home, life events, social support and city

Model 5 - Main effect of overprotection, adjusted for marital status and employment outside of the home, life events, social support, city and wealth

Model 6 - Main effect of overprotection, adjusted for marital status and employment outside of the home, life events, social support, city, wealth and emancipation

4.6.3.2 Adjusting for Confounders for Education

Education was entered into the equation as a dichotomous variable women with less than or equal to twelve years of education versus the rest. The main confounder for the association between low education and common mental disorder is SES, as indexed by household wealth. However, even after adjusting for this and all other potential confounding variables, the association is statistically significant. The fully adjusted odds ratio is 1.8 (1.1-3.0).

4.6.3.3 Adjusting for Confounders for Age at Marriage

Age at marriage was dichotomized into women getting married before the age of 20 years versus 20 or over. The association with common mental disorder is partly confounded by life events, social support. However, again, the main confounder is SES. After adjusting for all potential confounding variables, the association was no longer statistically significant. The fully adjusted odds ratio is 1.5 (0.8-3.1).

4.6.3.4 Adjusting for Confounders for Marital Satisfaction

The association between marital satisfaction and common mental disorder was estimated with marital satisfaction as a continuous variable. The odds ratio therefore represents the change in odd per unit increase in the satisfaction score. The protective effect of marital satisfaction was unaltered after adjusting for all confounders. The fully adjusted odds ratio was 0.7 (0.7-0.8).

4.6.3.5 Overview Questions Regarding Perception of GD

The association between perception of gender disadvantage (answering 'yes' to the question "Did you ever feel that your parents would have preferred you to have been a

boy?") and common mental disorder was strengthened after adjusting for city, and marginally attenuated after adjusting for SES. After adjusting for all potential confounding variables, the association remained robust and statistically significant. The fully adjusted odds ratio was 3.6 (2.3-5.7).

Table 4.38: The Association Between GD Indicators and Common Mental Disorder, Adjusted for Potential Confounders

	Education (<12 years)	Age at marriage (< 20 years)	Marital satisfaction (per 1 unit increase in satisfaction score)	Perception of GD*
Model 1	4.8 (3.3-6.9)	4.1 (2.4-6.9)	0.7 (0.7-0.8)	4.0 (2.8-5.9)
Model 2	3.9 (2.6-5.7)	3.7 (2.1-6.4)	0.7 (0.7-0.9)	3.8 (2.5-5.6)
Model 3	3.2 (2.1-4.9)	2.8 (1.6-5.0)	0.7 (0.7-0.8)	3.5 (2.3-5.3)
Model 4	2.9 (1.9-4.5)	2.4 (1.4-4.5)	0.7 (0.7-0.8)	4.3 (2.8-6.8)
Model 5	1.7 (1.0-2.8)	1.5 (0.7-3.0)	0.7 (0.7-0.8)	3.6 (2.3-5.6)
Model 6	1.8 (1.1-3.0)	1.5 (0.8-3.1)	0.7 (0.7-0.8)	3.6 (2.3-5.7)

* Answering 'yes' to the question "Did you ever feel that your parents would have preferred you to have been a boy?"

Model 1 – Main effect of GD indicator

Model 2 – Main effect of GD indicator, adjusted for marital status and employment outside of the home

Model 3 – Main effect of GD indicator, adjusted for marital status, employment outside of the home, and life events, social support

Model 4 - Main effect of GD indicator, adjusted for marital status, employment outside of the home, life events, social support and city

Model 5 - Main effect of GD indicator, adjusted for marital status and employment outside of the home, life events, social support, city and wealth

Model 6 - Main effect of GD indicator, adjusted for marital status and employment outside of the home, life events, social support, city, wealth and emancipation

4.6.4 Summary

The Prevalence of CMD

In the present study the prevalence of CMD signified by a score of 8 and above on the SRQ-20, varied significantly between the four catchment areas, from 26% (high SES Rawalpindi) to 83% (low SES Islamabad). After having adjusted for city and SES an independent effect of both city and SES was observed, however, SES accounted for a greater proportion of the variance.

Associations with Lower Socio-economic Status

In the low SES areas, adjusting for city, women were more likely to have common mental disorder. They were also more likely to be married and less likely to work outside of the home. Among the GD indicators, living in low SES areas was associated with lower care scores, higher overprotection scores, less education, earlier marriage, lower marital satisfaction, and were more likely to perceive gender disadvantage.

Univariate associations between gender disadvantage and common mental disorder

Of the gender disadvantage indicators, lower levels of care, higher levels of overprotection, lower educational attainment, younger age at marriage and marital dissatisfaction were each associated with common mental disorder. Perception of gender disadvantage (parents preference for the participant to have been a boy, and parents favoritism towards brothers or male relatives), was also associated with CMD. Only birth order was not associated with likelihood of common mental disorder.

Potential Confounding Variables

The variables associated with both perception of gender disadvantage (exposure) and CMD (outcome) were: marital status, employment outside of home, life events, social support, city of residence, socioeconomic status (represented by overall wealth), and emancipation.

Multivariate Analysis

In the multivariate analyses the association between CMD and the main gender disadvantage measures, care/overprotection, educational attainment, age at marriage, marital satisfaction, and the summary measure addressing parents preference for a son, were each adjusted for the above mentioned potential confounders.

As indicated in the stratified analyses socioeconomic status SES (based on place of residence) was modifying the effects of care and of overprotection but not the other GD indicators. Therefore, the models generated for these scores were presented separately for low and high SES catchment areas.

After having adjusted for all potential confounders, there was evidence for a significant association between low care and common mental disorder in high SES catchment areas, and a borderline significant association in low SES catchment areas. There was evidence for a significant association between high overprotection and common mental disorder in low SES, but not high SES catchment areas.

Of the other gender disadvantage indicators, the associations between low education and CMD and between age at marriage and CMD were somewhat confounded or mediated by household wealth. The association between perception of gender disadvantage (answering 'yes' to the question "Did you ever feel that your parents would have preferred you to have been a boy?") and common mental disorder

remained robust and statistically significant after adjusting for all potential confounders. The protective effect of marital satisfaction remained unaltered after adjusting for all confounders.

5 Discussion

5.1 General Methodological Considerations

5.1.1 Base Population

5.1.1.1 Geographical Location

This cross sectional survey was carried out in the twin cities of Rawalpindi and Islamabad. Our selection of study population and sampling strategy were dictated by the aims of the study. We did not propose to estimate the prevalence of CMD in the two cities. This would have required a sophisticated multistage sampling procedure, to ensure that the sample was representative of the city populations as a whole. Instead, our aim was to examine the etiological significance of gender disadvantage for CMD within the two cities. Emotional distress among women in Pakistan has been shown to be strongly negatively correlated with their socioeconomic status (Mumford et al., 2000). Therefore, we were particularly interested in examining the role of socioeconomic status as a potential confounder and an effect modifier. In order for us to achieve this in our analysis we included a high and low SES catchment area in both Rawalpindi and Islamabad to ensure adequate variance of SES in our sample.

The four catchment areas were selected purposively, primarily for convenience, and practicality. Safe and easily accessible areas were selected, for it was considered culturally atypical for young women to door-knock and carry out surveys in private homes in Pakistan. As a precaution, we also hired a chaperone/ driver to accompany

the research team on all trips and vigilantly wait outside the houses while interviews were carried out. Random selection of only four catchment areas would clearly not have ensured that these were representative of all such districts in the city. With four catchment areas the calculated sample size for each was 125 participants; had we randomly selected a larger number of catchment areas to represent a single SES stratum the number of participants in each would have been reduced below that necessary to ensure meaningful representativeness.

It should be noted that this study is not a total population catchment area study, and is not strictly representative of the entire catchment area, since we neither exhausted the households in each area (Mumford et al., 1997) nor did we randomly select the participants from an electoral list (Husain et al., 2000). Instead, we enumerated eligible participants by door knocking each door in each street in an ascending order until a quota of completed interviews was achieved. However, given that the districts were relatively homogenous, the findings are likely to be generalisable to the catchment areas as a whole.

5.1.1.2 Gender

The rationale for exclusively selecting women for this study was that in a patriarchal society such as Pakistan, gender disadvantage would pose a risk to women alone. Our findings support an association, among women, between their exposure to gender disadvantage and their risk for CMD. We have also observed a very high prevalence of CMD among our sample, consistent with other reports, from studies of both genders in Pakistan, of a marked female gender excess (refer table 1.3). However, we cannot claim to have presented direct evidence that gender disadvantage is

responsible. In order for us to do so, men and women would have to be studied, and the effect of gender on CMD estimated after controlling for those proxy measures of gender disadvantage that could meaningfully be assessed in both genders; for example, care or educational attainment. The design might be analogous to that of Jenkins' seminal study (1985) in which the effect of gender on risk for CMD was no longer apparent in civil servants matched for occupational grade.

We know that even today "no society treats its women as well as its men" (UNDP, 1997). Therefore, the aim of this study was not a comparison between men and women; rather it was to examine the level of gender disadvantage experienced by women and its plausible effect on their mental well-being.

5.1.1.3 Age

The inclusion criteria for the study was, 20-35 years of age for both married and single women, hence limiting the generalizability of the study. The rationale for selecting this age group was that gender differences in rates of depression have shown to be strongly age related. The largest differences occur in adult life, no differences are found in childhood and few in the elderly (Vazquez-Barquero et al., 1992; Beekman et al., 1995; Zunzunegui et al., 1998). Previous studies conducted in rural and urban Pakistan show similar results; there is a steady rise in psychiatric morbidity among women aged 18-20 years, reaching a plateau from 41-50 (Mumford et al., 1997, 2000). Other studies have indicated an even younger age of maximum risk for women; 16-35 years (Doodani and Zuberi, 2000). I was interested in examining the young, high risk age group.

It might be argued that the age band could have been smaller or larger than what was selected. In Pakistan women are expected to get married at an earlier age, the mean age at marriage in Pakistan is 21.6 years (Sathar and Ahmed, 1992). The possibility of a good match for the young women is diminished with every passing year, causing grief to both the parents and the daughters. The selected age band would thus enable us to compare the mental health of reasonable numbers of married and single women, all of whom would be of marriageable age. The 15 year age band also ensured reasonable variance in years of marriage for those who are married.

In order to facilitate access to both married and single women we carried out morning and evening shifts. Mornings suited married women as they had more free time after their husband and children had left home, whereas students and women employed outside home preferred evening shifts.

Keeping in mind the cultural milieu of Pakistan, it might have been awkward to interview young single or married women in their homes privately. However, it was noted that briefly describing the research to the family, particularly the elders, and where applicable to the husband facilitated privacy in conducting the interview.

5.1.2 Study Design

In this study we employed a cross sectional survey design, in which exposure to gender disadvantage was examined as a risk factor for CMD. It has been pointed out that a major obstacle in formulating effective health policy is the lack of robust epidemiological research in Pakistan (Baig, 2001). Cross sectional surveys are time efficient and economical to conduct. They also allow us to investigate multiple

exposures. This is relevant to our study, as we included several proxy measures to assess our exposure of interest. The limitation of cross sectional survey designs is that it does not permit assessment of direction of causality, because exposure and outcome are ascertained simultaneously. Both have occurred already and it is difficult to establish the sequence of events. Therefore, using this design, it will not be possible to establish a causal etiological association between level of maternal care and the daughter's later susceptibility to CMD. Another inherent weakness in cross sectional surveys is the potential for recall bias, which will be discussed in greater detail later.

It could be argued that a cost effective alternative approach could be the case control study design. The biggest advantage of a case control study is its efficiency in recruiting cases for a rare disorder. However, given the evidence from previous findings (see table 1.3), as well as the present study, the prevalence of CMD among Pakistani women is very high. Therefore, any advantage would have been lost, and the risk of selection bias would have been greater than for a cross-sectional survey. Moreover, if we had conducted a case control study participants would still be reporting their exposure to gender disadvantage retrospectively, leaving the issue of temporal sequence between exposure and disease unresolved.

One might make a case that an effort to examine a life course phenomenon warrants a prospective cohort study design, particularly because if gender disadvantage was measured before CMD onset we could be more confident about the direction of causality. This is the most attractive feature of this study design. For example a prospective study in the UK demonstrated that mother's mental health at 2 months postpartum may have an enduring influence on their five year old child's

psychological adjustment (Murray et al., 1999). Similarly a longitudinal prospective cohort study was carried out in Pakistan to examine maternal depression as a risk for malnutrition and illness among infants. Women in their last trimester were identified as depressed or non-depressed and further assessments of infants carried out at 2, 6 and 12 months (Rahman et al., 2004a). The underlying problem in applying such a design to our study is that while assessing the effect of mother's mental health on a 12 month old infant requires 14 months, a study examining a life span exposure of gender disadvantage would require decades of follow up. Hence the rationale for testing such hypotheses first in other cheaper and quicker types of study design such as a cross sectional survey.

An elegant option might have been a historical cohort design. This would have enabled us to eliminate the disadvantage of time and expense involved in the prospective design, and gained the advantage of definition of direction of causality, since historical, contemporaneous ascertainment of the gender disadvantage exposure (for some other purpose) preceded the outcome. Recently Pande and Yazbeck (2003) examined gender inequality with reference to differences in immunization received by sons and daughters, based on pre-existing data in India.

To our knowledge there is no suitable historical data regarding parental gender preference or gender disadvantage experienced by girls, recorded decades previously, that we could have followed up for the purpose of testing our hypothesis.

To summarize, we are necessarily limited in the inferences that we can make regarding the significant associations between gender disadvantage and CMD

observed in this cross sectional survey, since both are measured simultaneously and several factors including knowledge of the outcome might have influenced the report of the exposure. However, under the circumstances the most feasible approach was the one taken.

5.1.3 Sample Size

The sample size selected for our study was 500, 250 in each socioeconomic stratum. This enabled us have 80% power at 95% confidence to detect effects (prevalence ratio) of 1.5 or greater for risks concentrated in the lowest 20% of the PBI care dimension subscale. In general, a power of 80% is regarded as acceptable. The selected effect size was relatively conservative – the judgment being that smaller effects than this would have little public health or policy relevance. In the event that the observed effect was much larger than the minimum detectable effect size at 80% power and 95% confidence, we would be able to reject the null hypothesis with a high degree of confidence. However, the results of the study indicated socioeconomic status to be an effect modifier for two key gender disadvantage indicators, care and overprotection. While the study was designed to have adequate power to detect the effect of low care in both SES strata, it does not have enough power to detect effect modification with precision. This was not an a priori hypothesis. Further elucidation would therefore require a new and larger study.

5.1.4 Validity of Instruments

5.1.4.1 Self Reporting Questionnaire (SRQ)

The main outcome measure in this study was the SRQ-20, with a score of 8 or more signifying caseness. The recommended cut-off point in the WHO manual is 7/8, this threshold has been previously used in studies conducted in Pakistan (Hamid,2001). It has also been validated in India (Jaswal, 1995). In a recent review (Harpham et al., 2003), the SRQ-20 has been recommended as a robust, valid, cost effective way to measure mental health.

Other competing instruments that we could have used for measuring caseness were; the GHQ-12, Bradford Somatic Inventory (BSI), CIS-R and the Agha Khan University Anxiety and Depression scale (AKUADS). The GHQ (Goldberg, 1972) was developed for use with western patients, whereas, the SRQ was developed specifically for use in the developing countries. Both SRQ-20 and GHQ have been used in developing countries (Sen et al, 1987; Harding et al., 1980; Dhadphale et al. 1983; Chan and Chan, 1983). A comparison of GHQ-12 and the SRQ-20 found similar validity coefficients against the gold standard of CIS (Mari and Williams, 1985). A recent study conducted in Pakistan validated the GHQ 12 against the Psychiatric Assessment Schedule (PAS) as the gold standard in primary health care facility and indicated it to be a valid indicator of psychiatric illness with high sensitivity (93%) and specificity (88%).

Another community study examining the validity of the SRQ-20, and the BSI 44, against the PAS found both measures to be highly valid measures of assessing

psychiatric morbidity particularly for women, the optimum SRQ20 cut off point for women being 7/8 with 78% sensitivity and 81% specificity (Saeed et al., 2000). In the absence of differences in validity coefficients it has been concluded that the choice of a questionnaire to assess psychiatric morbidity should be based on practicalities such as the availability of validity data for a comparable population or the particular needs of a given survey (Goldberg and Williams, 1988). The SRQ-20 has been used extensively as a screening instrument in Pakistan (Mumford et al., 1997; Husain et al., 2000) other studies have used it as the main outcome measure (Rahman et al., 2004b). Moreover, it has been asserted that patients from developing countries somatize their depression, whereas patients in the western world psychologise depression (Leff, 1988; Goldberg and Bridges, 1988), others have argued against it (Patel et al., 1998). In either case the SRQ-20 includes both psychological and somatic question items, whereas the BSI exclusively focuses on somatic symptoms and the GHQ-12 does not cover somatic complaints. The fact that the SRQ-20 reflects the multidimensional nature of psychiatric morbidity also made it more appropriate for use in our study population.

The Agha Khan University Anxiety and Depression scale (AKUADS) could be considered a contender, particularly since it was developed indigenously. It has been validated against structured interview schedule based on DSM III, and reported to have high sensitivity and specificity. However, the advantage of using the SRQ-20 over the AKUADS is that since the SRQ-20 has been so widely used both within Pakistan as well as in other developing countries it permits a broader comparison of findings.

In a comparative review it is suggested that AKUADS is a superior choice to the SRQ-20, since the former has a 4 point scale as opposed to a simple yes/no response option in SRQ (Ali and Amanullah, 1998). However, Minhas and Mubbashar, report from their study that a yes/ no format is easier to comprehend as compared to a more complicated response scale such as the GHQ-12 (1996), which is comparable to the one used in AKUADS.

Finally, the CIS-R (Lewis et al., 1992) would have been an elegant choice with the added advantage of generating a clinical diagnosis along with the probable caseness. However, my pilot study revealed that the CIS-R was not feasible given the time demand it imposed on the participants. Substituting the SRQ-20 for the CIS-R reduced the interview time by 30 minutes.

The SRQ-20 indicates probable psychiatric morbidity, the purpose of the study was to examine etiological association between gender disadvantage and increased likelihood of CMD in general. Therefore, the fact that the SRQ-20 does not generate a diagnosis is not a particular limitation for this study. Furthermore, our study provides evidence of concurrent validity for the SRQ-20; confirming that women who were probable cases also had a higher score for the number of disability days that they had experienced as well the overall WHODAS score.

5.1.4.2 PBI

We used the parental bonding instrument (PBI) as a proxy measure to assess the level of gender disadvantage in our study. It has two subscales 'care' and 'overprotection', the care dimension was used as the main predictor of risk for CMD in our study.

It has been suggested that both subscales are valid measures of actual and not merely perceived parental behavior. Both subscales have been shown to be stable over time and unaffected by age and social class (Parker, 1989, 1990). Parker (1981) found reasonable correspondence between the participants score on the PBI and their siblings score on the PBI when they were requested to complete the questionnaire putting themselves in the participants place. Moreover, this correspondence in scores did not appear to be influenced by the clinical states of the participants. There is consistent evidence that the response on the PBI is not affected by current depressive symptoms particularly among those who are mildly depressed (Gotlib et al., 1988; Parker, 1981). Parker, (1981) carried out a study including students and their mothers and reported that higher depressive scores were returned by those who perceived their mothers as less caring and by those whose mothers judged themselves as showing those same parental characteristics. As mothers are more likely than other observers to judge their attitudes and behaviors toward their child in a positive or socially desirable way, results suggest that findings linking PBI scores with levels of depression are not determined merely by a negative response set on the part of the subject. Studies using larger population based samples have found higher siblings correlations of parental care compared to parent-offspring correlations (Kendler, 1996; Kendler et al., 2000). These correlations have led Kendler to conclude that the PBI represents at least a 'partial reflection of true parenting' (Kendler, 1996).

In my pilot study, I demonstrated that the PBI in Pakistan had a similar factor structure to that observed in Anglophone cultures. Internal consistency was high for both the subscales. I demonstrated concurrent validity with CIS-R scores and marital

satisfaction levels. In our study lack of care was the proxy indicator of gender disadvantage nominated for testing the main hypothesis. It was also nested within a theoretical model that understood gender disadvantage from a life course perspective, starting from birth. As hypothesized, it was strongly associated with all of the other ensuing proxy measures of gender disadvantage, including the two summary measures aiming to provide an overview of the participant's subjective perception. This provided incidental evidence for concurrent validity of the care subscale. Care was not found, however, to be associated with the participant's birth order.

5.1.4.3 Marital Satisfaction

The scale has not been validated in Pakistan and other developing countries. Since the concept of marital satisfaction has not been previously explored in Pakistan a validation attempt, regarding its construct was made in the pilot study. Supporting evidence was found (pilot study results) indicating an association between low marital satisfaction and CMD.A correlation between low care and low marital satisfaction was also observed. The qualitative study was carried out to ascertain the face validity of the items included in the scale.

5.2 The Main Hypothesis

The main hypothesis stated that after adjusting for the effect of socio-economic status, and other potential confounding variables, women in the lowest quarter of the sample for the care subscale of the PBI will have 1.5 times the risk for CMD as defined by the SRQ scores of 8 or greater.

The data presented in table 4.36 indicates that, in this sample, the odds ratio for CMD for women comparing the lowest quarter on the PBI care subscale with others varied according to SES. For women residing in low SES the odds ratio was 1.9 (0.9-3.8) p=0.07, and for those residing in high SES areas, 8.9 (3.4-23.3) p<0.0001 after adjusting for all potential confounders; marital status, employment outside home, life events, social support, city of residence, wealth, emancipation. Thus, the risk for CMD does appear to be higher for those women who receive low care, particularly those living in higher socioeconomic class neighbourhoods.

5.2.1 Internal Validity

Assessment of the internal validity of this finding requires that we examine the competing claims of chance, bias, confounding and reverse causality, as alternative, non-causal explanations for the association.

5.2.1.1 Chance

Statistical procedures provide us with information regarding the strength of the evidence for accepting or rejecting the null hypothesis, by estimating the probability (p) that an observed association is accounted for by chance alone, the null hypothesis being true. Conventionally, the threshold for statistical significance is taken to be p=0.05, which constitutes the generally accepted level of risk of making a type I error. Confidence intervals complement the p-values as they include the true parameters of an association on at least 95% of occasions. In our findings, the odds ratio for low care and CMD is highly significant 8.9 (3.4-23.3) p<0.0001 in high SES that is the probability of deriving this solely due to chance is one in a thousand. However, the

odds ratio demonstrated in low SES are not as robust (0.9-3.8) p=0.07, and do not quite reach the conventional levels of statistical significance. In spite of this, it is possible that there is in fact an increased risk for women residing in low SES, perhaps as big as 3.8, therefore we should not over interpret the statistical non-significance of risk in this stratum. Another important issue to be considered is that of effect modification. This study was designed to provide 80% power at 95% confidence to detect prevalence ratios of 1.5 or greater for risks concentrated in the lowest quarter of the care score vs. the top three fourths in each high and low residential strata. However, as conceded earlier (See Sample Size, section 5.1.3), effect modification was not part of the a priori hypotheses. Nonetheless upon conducting several analyses to examine effect modification by SES among all the gender disadvantage indicators we found a statistically significant effect modification for care and overprotection. It is therefore plausible that the effect modification detected in our findings might be attributable to the extensive statistical analyses carried out to assess modification by SES on all gender disadvantage indicators. This could imply that there is higher than usual chance of making a type I error. The elicited effect modification by SES may be an artefact of chance alone.

5.2.1.2 Bias

Bias refers to an error arising from the design or implementation of the research, resulting in deviation of inferences from the truth, there are three main types of bias, selection bias, response bias, and information bias. Since, we relied on retrospective reports of parental behavior, there are reasons to be concerned about bias in such data (Gerlsma et al., 1990) I shall consider each one independently with reference to the current study.

5.2.1.2.1 Selection Bias

Selection bias is an error due to systematic differences in characteristics between those who take part in a study and those who do not. Where selection bias occurs, the result is a difference in the relation between exposure and outcome between those who entered the study and those who would have been eligible but did not participate. In a cross sectional survey design, such as this, where all residents of a particular area are considered representative of that residential stratum and selection is not contingent upon exposure to gender disadvantage or risk of CMD, selection bias seems unlikely to introduce bias. However, it might have affected the findings if non-participants differed from the participants in relation to the exposure and/or outcome. This will be discussed in the following section of response bias.

5.2.1.2.2 Response Bias

We have demonstrated a high response rate in this study therefore, the findings are unlikely to be affected by bias introduced due to non response. The high response rate could be attributed to the sensitive and professional approach adopted by the interviewing team, and the fact that the team worked in pairs; two women entering a household was considered more appropriate than a young single girl entering the house alone. Response rates were similar for the low and high SES areas, the only difference being that in the low SES areas it was primarily the husband or the mother in-law who decided on behalf of the woman whereas in the high SES it was the woman herself who displayed a lack of interest.

5.2.1.2.3 Information Bias

If the information obtained from the study participants is systematically inaccurate regarding the exposure and outcome under study, information bias may occur. This could take the form of observer bias or respondent bias. If the information error was random, either by the observer or the interviewer it suggests that the association reported in this study was diluted and the association might in reality be even stronger than what we had found. For example, given the cultural milieu of Pakistan (see introduction section 1.8.8) it might be argued that both participants and interviewers would present a general inclination to rate mothers as more caring, due to the communal tendency to revere the mother as opposed to presenting her in a negative manner. This occurrence in itself would perhaps indicate that the true association between low care and CMD is much higher than reported. Information bias however, would have occurred if this inclination to overestimate the level of care from mothers was present to a different degree between cases and non-cases, that is that the error in ascertainment of the exposure was non-random or systematic with respect to caseness. In the following sections, I shall discuss the possibility and impact of such non-random error in this study.

5.2.1.2.4 Observer Bias

Bias from the interviewers might be considered a problem in this study particularly because both exposure and disease have already occurred when the data is collected. This could provide an opportunity for the over zealous interviewers consistently to score low care for mothers with high SRQ scores and high scores on the SRQ-20 for women reporting low maternal care. We cannot claim an absolute eradication of such tendency towards bias in this study. We did however, take some measures to reduce

this possible contamination of results by keeping the interviewers blind to the main hypothesis under study. Moreover, the PBI was the first main questionnaire in the interview portfolio and the SRQ-20 was the last one, this was a deliberate attempt to avoid both response bias and observer bias in the estimation of the exposure. It might also be argued that if two or more interviewers rated the participants, on the PBI the inter-correlation between the two raters might have helped reduce observer bias (Parker et al., 1979). This approach however, would have been time consuming and expensive. Moreover, it would have been, logistically rather difficult to impose the extra time burden on each participant.

5.2.1.2.5 Recall Bias

Our cross sectional survey design makes the findings particularly susceptible to recall bias. Retrospective recollection of events is inherently prone to bias and might be further aggravated when an individual who is suffering from psychiatric morbidity is invited to recall possible causes such as anomalous parenting during early years of life (Lewinsohn and Rosenbaum, 1987). If women with CMD are systematically and erroneously reporting low maternal care then the significant associations found between low maternal care and CMD would be spurious overestimations of the true association.

The care subscale assesses parenting over early childhood and adolescence. Therefore, the extent to which different phases in life induce variation in recollection of parental attitudes must be conceded (Kendler, 1996). In addition, to these complexities, reporting bias is likely; parents stress the similarity with which they treat their children, while children emphasize the differences in parental treatment

(Plomin et al., 1994), suggesting that social desirability plays an important role depending upon who is defined as the respondent. Parker, (1981) has however, demonstrated correlations between offspring's reports on maternal care and vise versa. I will briefly discuss these concerns relevant to the present study in this section. Ethical considerations necessitated that participation in the study was based on informed consent, however, providing too much information might have encouraged the respondents to seek the implicit intent of the study and therefore bias the study. In order to attain a balance, participants were told that the study entailed general health questions and evaluation of overall well-being. The specific intention to assess experience of gender disadvantage as a risk for mental health was not revealed. The interview schedule consisted of an extensive set of questionnaires addressing a variety of potential confounding variables and possible risk factors. This was anticipated to facilitate distraction from the main focus of the study for the participants.

We still cannot exclude the possibility of recall bias. However, we have demonstrated a strong and significant association between care and other more objective proxy measures assessing gender disadvantage such as education and age at marriage. Although this does not provide us with conclusive evidence suggesting that the association between low care and CMD is not an artefact of recall bias, it does indicate concurrent validity.

In order to minimize recall bias we could have involved other family members such as siblings (Duggan et al., 1998) or mothers (Parker, 1981) themselves. However, it has been observed that siblings of cases and controls when asked to complete two sets of the PBI, one for themselves and one for their siblings demonstrated difficulty in

differentiating between their own parental care and their assessment of that of their sibling from the same parents. Although not involving the parent or the sibling might be considered a limitation of this study, it would have been difficult to access these relatives and to have ensured them of confidentiality. Failure to have done so would have been likely to lead to socially desirable positive estimates of parenting. Though further precautions might have been taken to minimize the error of bias, we should not dismiss the findings.

5.2.1.3 Confounding

In general a confounder must be independently associated with both the exposure under study and the outcome under study. Confounding occurs when an estimate of the association between an exposure and an outcome is mixed up with the real effect of another exposure on the same outcome, the two exposures being correlated. However, a variable cannot produce confounding if it is prohibited from varying. Strategies in the study design to limit confounding operate by removing variation in confounding factors between comparison groups of interest. The frequently used strategies are; randomization, restriction and matching. For the present study we decided to retain the heterogeneity within the sample, with the intention of addressing confounding in the statistical analysis which is deemed more appropriate for observational studies. Furthermore, we wanted to incorporate an extensive list of potential confounders, to first begin to understand their role within this theoretical framework as risk factors, confounders, effect modifiers or mediators.

The two approaches employed in statistical analyses to identify and adjust for confounding are stratified analyses and multivariate analyses respectively. Since a

confounder by definition is independently associated with the risk factor and the outcome, we judged their confounding effect by identifying those variables that were associated with both CMD and gender disadvantage. This was achieved by first carrying out univariate analyses between CMD and all plausible potential confounders that we had taken into account and measured. Secondly, we carried out similar analyses between the gender disadvantage summary question; regarding parents preference for the participant to have been a boy and all the possible confounders, to sift risk factors from confounders. Reasons for the selection of this summary question to represent gender disadvantage exposure have been addressed under results theoretical model discussion (section 4.4).

Next we carried out stratified analysis and identified the following to be plausible confounders; marital status, employment outside home, life events, social support, city of residence, wealth and emancipation. Previous studies conducted in Pakistan had demonstrated an association between socioeconomic status and CMD (see introduction section 1.7.1), and we had hypothesized that SES might be associated with gender disadvantage. The stratified analysis revealed that SES was in fact a confounder for several of the proxy measures. However, we also demonstrated that it was an effect modifier for the care and overprotection subscales. In order to take into account effect modification, the multivariate analysis for care and overprotection dimensions of the PBI was carried out separately for the high and low SES catchment areas.

Finally, we carried out multivariate analyses to adjust for the confounders. However, in order to avoid over adjusting the effect of other mediating factors that we had

contended lay on the causal pathway, were deliberately not adjusted for in the logistic regression analysis. Such that for the association between low care and CMD we did not include in the logistic regression analysis; educational attainment, age at marriage, marital satisfaction and perception of gender disadvantage summary question. Since we had hypothesized that these were mediating factors it was not appropriate to include them as confounders.

In the logistic regression we systematically adjusted for each potential confounder; marital status, employment outside home, life events, social support, city of residence, wealth, emancipation. As demonstrated in table 4.36 as we incrementally adjust for all the plausible confounders the association between low care and CMD does not appear to alter drastically, indicating therefore that the association demonstrated is relatively free of confounding.

It is possible that there may still be some residual (unadjusted) confounding. Some potential confounders may not have been measured with sufficient accuracy, others may have been omitted. Jardine et al (1984) suggested that given the significant co-variation between neuroticism with symptoms of mood and anxiety the association between anomalous parenting and CMD might be attributed to common personality diathesis such as neuroticism. Duggan et al (1998), examined if the link between low perceived care and depression is explained solely by neuroticism. In the analysis of co-variance, after allowing for neuroticism and depression, the difference between never depressed, and the recovered depressed group in total perceived care remained significant suggesting that low perceived care and depression are partially independent of neuroticism. Kendler et al (2000) argued that liability for offspring to

develop psychological morbidity could be due to their inherited genetic influences rather than lack of care. However, once history of parental psychopathology was controlled for only a modest diminution in the association between parental care and psychopathology in offspring was observed. It is difficult to unequivocally eliminate all potential confounders in any study, it must be recognized that this study is not an exception.

5.2.1.4 Direction of Causality

We can define a cause of a specific event as an antecedent event, condition, or characteristic that was necessary for the occurrence of the disease at the moment it occurred, given that other conditions are fixed. However, experience and reflection should easily persuade us that the cause of any effect must consist of a constellation of components that act in concert (Mill, 1862).

In the present study, we have argued that low care by mother elicits an increased risk of CMD among young women. Moreover, we have proposed a causal pathway, a kind of 'domino effect' of accumulating gender disadvantage across the life course, set in train by male gender preference from the moment of birth. The cross sectional study design employed in our study does not assist in establishing a temporal sequence between exposure and disease and is theoretically susceptible to the possibility that the exposure is the result rather than the cause of the disease. Therefore, it might be argued that an inherent limitation of this study design is that we cannot claim that low maternal care earlier in life caused CMD in adulthood.

Temporality refers to the necessity that the cause precede the effect in time. This criterion is inarguable, insofar as any claimed observation of causation must involve the putative cause (GD) preceding the putative effect (CMD). According to Hill (1965), temporality is a sine qua non for causality; if the putative cause did not precede the effect that indeed is indisputable evidence that the observed association is not causal.

The theoretical model employed in this study aimed to examine gender disadvantage as a life course phenomenon, and we addressed each epoch within the life cycle through different proxy measures. Low care, the main risk factor, as assessed by the PBI care subscale aimed to examine early parenting by the mother up to 16 years of life of the participants, that is from childhood to adolescence. Whereas CMD caseness of the respondents was based on their present mental health that is in the last 30 days, which obviously addresses the adulthood period in their lives. If we concur with the available evidence pertaining to the PBI care subscale's validity of measuring actual parenting during adolescence (see validity of PBI for details, section 5.1.4.2), and the validity of SRQ-20 (see validity of SRQ for details, section 5.1.4.1) measuring current mental health, then it may be argued, that despite the limitations of the cross sectional survey design, it is temporally not plausible that the present mental health might have caused low maternal care during adolescence. Low care as assessed in the present study must precede CMD in time sequence, and it does not seem plausible that psychological morbidity in adulthood could cause low care in an earlier life phase. Though, recall bias might have been an issue (see earlier section on recall bias, section 5.2.1.2.5), it seems unlikely that in reverse time sequence low care followed CMD.

Several studies employing varied study designs have attempted to substantiate a more explicit support for the direction of causality, indicating low care to be predictive of psychological morbidity in adulthood. Gotlib et al (1988), conducted a longitudinal study where women were administered the Beck Depression Inventory (BDI) and the PBI at time 1 that was three days after giving birth, and were re-administered the same at time 2 after a 30 month interval. The women were requested to complete the PBI exclusively for their relationship with their mothers. On the basis of time 1 and time 2 scores, the women were assigned to three groups; 1) those who were depressed on both assessments (persistently depressed), 2) those who were not depressed on both assessments (non-depressed), 3) those who were depressed on first assessment but not depressed on the second (remitted). The authors reported that the PBI care scores of persistently depressed, and the remitted women differed significantly on the maternal care dimension, on both assessments. That is women who remitted had a much higher score compared to those who remained depressed. Thus, the level of perceived caring of mother measured in early postpartum period was predictive of the level of depression 30 months later. Since the level of depression reported at time 1 by those depressed participants who subsequently remitted was equivalent to that reported by those initially depressed women who did not remit, therefore the difference in level of perceived maternal care at time 1 could not be attributed to differences in the severity of the original depressive symptoms. This study provides some tangential support to the inference from our findings that low maternal care earlier in life is predictive of an increased risk of CMD in adulthood.

Kendler et al (1993), assessed female twins three times with a one year interval each time, they used a structured equation model to predict onset of depression in a large female twin sample. They found that maternal warmth (PBI, care), had no direct effect on the liability to develop major depression; rather its effect was mediated indirectly through a lower risk of prior depressive episodes, lower levels of recent stresses and lower neuroticism and genetic factors. Again, this does lend credence to the notion that the PBI is measuring a phenomenon that has its impact in early life, and which may be causally, if indirectly related to CMD in adulthood.

Finally, it should be noted that my study is flawed in investigating prevalent rather than incident cases of common mental disorder. In such a study there is always the danger that risk factors that increase the duration of a disease episode will be confused with those that increase the risk of onset.

5.2.2 External Validity

In my study I have examined low care for women as a proxy measure for gender disadvantage, and we have demonstrated; firstly that it might be an early marker of life long disadvantage arising from gender bias, and secondly that it could result in an increased risk for CMD, perhaps more so in those living in high SES compared to low SES catchment areas. I shall now examine to what extent these findings may be generalisable.

5.2.2.1 Parental Care and Gender Disadvantage

In this sample low care is strongly associated with other gender disadvantage indicators both objective; low educational attainment, earlier age at marriage and subjective; low marital satisfaction and the perception of gender disadvantage overview question that participants felt their parents would have preferred them to have been a boy. This evidence endorses the concurrent validity of low care as a plausible assessment of gender disadvantage. To our knowledge low care as assessed by the PBI has not been previously employed as an indicator of gender disadvantage indicator in Pakistan or elsewhere. Therefore the available literature does not lend itself to contextualizing our findings directly. However, research has consistently demonstrated female gender disadvantage per se to affect women's lives adversely at different stages of the life course in cultures where son preference prevails (Kabeer, 2003) such as Pakistan, India, Bangladesh and East Asia; China, Taiwan, Korea (UNESCO, 2004). The disadvantage is seen at its starkest in the 'missing women' phenomenon, 100 million female deaths in early life, potentially avoidable if boys and girls had received equal care (Coale, 1991; Sen, 1992). In India and Pakistan, a female child has a lower chance of survival to her fifth birthday compared to a male child, an observation generally attributed to lack of care (Filmer and Prichett, 2001). Whether it is lack of care in the form of poor nutrition (Pande, 2003; Choudhury et al., 2000), lack of preventive care (Pande, 2003; Pande and Yazbeck, 2003), or delays in seeking help (Abbasi et al., 1998; Hasan and Khanum, 2000). Others have demonstrated discrimination in food distribution and health care made available to female children (Chen et al., 1981; Bhuiya et al., 1987; Henry et al., 1993).

In each instance the model is one in which gender bias is seen as a culturally determined invariant; all women in the population are presumed, by their gender, to be exposed. Previous researchers have not sought to compare outcomes between girls and women who experience gender disadvantage to greater or lesser degrees. Instead, Sen's work being a good example, they have tended to compare outcomes, for example survival and mortality, between genders in regions where gender bias is thought to be prevalent, sometimes also between regions with differing degrees of bias. There is an implicit assumption of lack of care as an essential component in this process, determining negative consequences, but they do not directly address the subjective experience of it by women.

Perhaps one of the strengths of the present study is that it expands on the available literature by addressing the phenomenon of gender disadvantage as experienced by women themselves, and offers a comparison between women who do and those who do not experience gender disadvantage, thus estimating the life long detrimental impact of low care on their quality of life and personal well being.

5.2.2.2 Low Care and CMD

In support of our hypothesis, we have demonstrated an association between low care, as assessed by PBI maternal care subscale, and CMD. There is substantial evidence indicating a strong and significant independent association, relatively free of bias between the two in the developed world (see section 5.1.4.2). Therefore, our findings concur with evidence from the West, from community studies (Parker et al., 1995), and other non-clinical groups (Parker, 1979). However, no previous research in

Pakistan or in the developing world has examined low maternal care as a risk factor for CMD, thus confining contextualizing of our findings to the Western studies.

In the present study, we have demonstrated effect modification by SES, that is women in high SES who perceive low care are more at risk of CMD compared to those residing in low SES. No prior research with PBI has demonstrated effect modification by SES.

Having already acknowledged that effect modification was not a part of the a priori hypotheses and that the study was not powered to assess with precision this occurrence, the possibility of a type I error persists. Moreover, the fact that previous studies have not evidenced it might mean that this was a spurious effect in our study or it might be that it is a plausible phenomenon and needs to be further explored in order to ascertain the true dynamics of SES vis-à-vis experience of low maternal care. Health inequalities in the developing world have been defined in socioeconomic terms (Gwatkin, 2000; Wagstaff, 2000). However, in more objective assessments of gender discrimination, it has been shown to be prevalent across the SES. For example, Pande and Yazbeck (2003), demonstrated gender differential in immunization in 17 of the largest states in India. They found that boys fare better than girls at almost every level of the household wealth. Other findings have also supported that gender differential does not appear to differ by household wealth (Das Gupta, 1987).

One plausible explanation for our finding might be that though gender discrimination persists across socioeconomic domains, the women residing in high SES are more sensitive to the subjective experience of low care as opposed to women residing in

low SES. The sensitivity might arise from heightened awareness of their rights through exposure to education, media, and organizations within the community advocating equity for women. This might in turn have enhanced their expectations regarding their entitlement to care and affection by mother. Thus, when they perceive gender disadvantage it has a comparatively more acute impact on their psychological well-being. Whereas if the inequity is subtle; such as low care from mother a woman from low SES might not translate it as discrimination since parental favoritism is culturally prevalent and imbibed in their own psyche.

5.2.2.3 Intrinsic Limits to Generalisability

Our sample was restricted to the urban population of Rawalpindi and Islamabad. There is considerable cultural diversity within Pakistani cities; the findings of our study might not therefore be applicable to other large cities. The findings may well not be applicable to rural populations within Pakistan, since the population in the rural areas is expected to be quite different in their social circumstances for example the economic profile might be much lower, the literacy rate is also known to be lesser and the general expectations from life might be radically different. Therefore, further attempts need to be made in other populations to see if the findings are replicable, before placing too much weight on our findings. Clearly also the findings may not be extrapolated to an older age group of 35 and over. Effects of gender disadvantage experienced earlier in life may not persist, and further studies would be required to examine such age groups.

Amidst these limitations of representativeness of our sample, it is possible that the theoretical paradigm of gender disadvantage as a life course phenomenon and the

association between low care, as a proxy for gender disadvantage and CMD might be relevant to other populations where gender disadvantage prevails. This then permits extending these findings as a plausible model to be further examined in countries where son preference is rife and a large numbers of 'missing women' are suspected. For example India (Sen, 1989), China (Hull, 1990; WuDunn, 1993), United Arab Emirates (United Nations, 1991) and other developing countries in East Africa (Orley et al., 1979; Gureje et al., 1992).

5.2.3 Conclusions Regarding Main Hypothesis

The strength of this study lies in the fact that we have provided evidence supporting the hypothesis that low care scores are independently associated with increased likelihood of CMD among young Pakistani women, and that low care scores seem to reflect, in part gender disadvantage as experienced by the young women. We recommend further research in this area to:

a) derive better indicators of gender disadvantage

b) confirm the extent to which the finding can be generalized

c) better understand the effect modification by socioeconomic status

d) investigate the mechanism, perhaps through qualitative as well as quantitative research

5.3 The Second Hypothesis

The second hypothesis stated that the following indicators of gender disadvantage across the early life course: the perception that parents would have preferred a boy,

lacking an older brother, higher overprotection scores and lower care subscale scores on the Parental Bonding Inventory (PBI), having less education, earlier age at marriage and lower marital satisfaction; will each be associated with common mental disorder in young Pakistani women.

5.3.1 Perception of Gender Disadvantage

In the univariate analyses, those women who perceived their parents to have preferred them to have been a boy, or perceived preferential treatment of their brothers or other male members were at an increased risk of CMD compared to those who did not. The first summary measure of perception of gender disadvantage, ('Did you feel that your parents would have preferred you to have been a boy?') was robustly associated with all six GD indicators; birth order, care, overprotection, education, age at marriage and marital satisfaction; in the direction hypothesized, whereas, the second summary measure ('Did you feel that your parents favored your brothers or other male relatives over you?') was not associated with birth order and marital satisfaction. The first of these two questions seemed to have superior face validity and, given its pattern of association with other gender disadvantage indicators, was expected to serve best as a summary indicator of GD. Hence, this discussion will address the association between CMD and the women's perception of their parents having preferred them to have been a boy.

After having adjusted for all potential confounders; marital status, employment outside of home, life events, social support, city of residence, wealth and emancipation, our findings indicate that those women who felt their parent's would have preferred them to have been a boy were substantially more at risk of CMD, and

chance did not appear to be accounting for this association (OR 3.6 (2.3-5.7), p<0.0001). The obvious drawback in requesting the participants to present a subjective summary account of their experience is that of recall bias. However, the fact that this subjective measure demonstrated a robust association with both subjective and objective measures in our study provides credence to its concurrent validity. For recall bias to have extended into the realm of differential error in order to invalidate our findings, the higher recollection of negative memories for example would need to be occurring more among cases than non-cases. This is plausible but perhaps unlikely. Firstly, this question was deliberately nested within a larger set of questions addressing diverse aspects of the overall experience of gender disadvantage. Secondly, given the cultural milieu of Pakistan (see literature review section 1.8.8) this question might not necessarily hold a negative connotation for the participants. This however, is just a speculation and will need more research to ascertain. Thirdly, the other questionnaires included in the portfolio were expected to divert the participant's attention from the focus of the study. Residual confounding may have accounted for the association, perhaps one of the confounders that might have been overlooked is conflict between daughters and parents. It has been suggested that when the demands and aspiration of children from life are not in accordance with their parents it might cause inter-generational conflict (Torky, 1974; Hamza, 1959) leading to an increased risk of CMD. For example in the Arabian culture the conflict has been shown to center mainly around patterns of relationship with parents, and the level of emancipation, posing an increased risk of CMD (El-Islam, 1983). As this was not part of the a priori hypotheses we did not address this issue in detail, we did however include an ad hoc scale consisting of four question items, to assess the level of emancipation (see methods section 3.7.5.4). In the post hoc analyses, we did not find

an interaction between perception of gender disadvantage and level of emancipation. Nevertheless, it was included in the multivariate analyses as a potential confounder. This ad hoc measure will need to be refined and validated for any future undertaking. In the present study we could not unequivocally establish the direction of association, since we could not have documented the parent's initial preference. A prospective cohort design is best suited to establish the temporal sequence.

To our knowledge, no previous study has examined such a subjective expression of gender disadvantage within women. It might be that a more appropriate approach would be to include qualitative as well as quantitative research in order to bring forth an in depth comprehension of women's subjective perception of gender bias in Pakistan.

5.3.2 Sibship

It was hypothesized that women who had an older brother or a younger brother might be protected against gender disadvantage, compared to those who did not. The argument was that if the parent's desire of having a son is fulfilled the daughters might have a better chance in receiving maternal care, might be less overprotected, be entitled to higher education, get married at a later age and consequentially be happier in their marriage. However, this argument was not supported by our findings. One plausible explanation could be that the less favorable birth order was opposite to the one we had hypothesized, that is women who have an older brother or a younger brother are at a greater disadvantage, since the allocation of resources would be favored towards the brothers. In this study contrary to the hypothesized direction,

women who had an older brother received less education, were most overprotected, and were most likely to have been married at an earlier age.

5.3.3 Overprotection

As demonstrated in Table 4.37 the odds ratio for CMD among women, comparing the top fifth on the overprotection subscale of PBI with others varied according to SES. For women residing in high SES the odds ratio was 2.3 (0.4-14.4) p= 0.41, and for those residing in low SES areas 12.1 (4.5-32.2) p<0.0001 after adjusting for all potential confounders; marital status, employment outside of home, life events, social support, city of residence, wealth and emancipation. The association between high overprotection and CMD for residents of low SES areas did not appear to be affected by the confounders and remained robust, whereas for women residing in high SES the same association was attenuated slightly. We have previously argued that CMD is unlikely to have influenced risk exposures that by definition took place much earlier in the life course, thus rendering reverse causality an unlikely explanation for this finding. Current psychiatric morbidity may, however, have biased the recall of this aspect of parenting. Two interrelated factors do raise concerns about the validity of this association; firstly, as conceded earlier vis-à-vis care and CMD, effect modification by SES was not an a priori hypothesis. Secondly, the impact of the effect modification by SES is in the opposite direction to that observed for low care and CMD, with no clear explanation for why this might be so. Accordingly, it is entirely possible that the observed effect modification represents a type I error. Replication and clarification are needed.

To our knowledge overprotection has not been used as a proxy for gender disadvantage in previous studies, however in the present theoretical model, as hypothesized, overprotection is strongly and significantly associated with all the other gender disadvantage indicators, which, in turn provided credence to its concurrent validity. In our literature search, we did not find any study examining an association between high overprotection and CMD in Pakistan or in other developing countries. There is a plethora of evidence from the West indicating it to be a risk factor for adult psychopathology (see section, 5.1.4.2), though none of the previous studies have demonstrated effect modification by SES.

There were three rationales for including the overprotection subscale in the present study: firstly, it was anticipated that the validity of our findings would be increased if the care statements were embedded in the full PBI questionnaire that was addressing a range of parenting issues and not just one dimension. Secondly, it would replicate other studies that had used both PBI subscales. Thirdly, if recall was biased by low mood it seemed more likely that this would impact upon recollections of care rather than overprotection.

One tentative explanation for the present findings is that the interpretation of high overprotection among Pakistani women varies according to SES. Parker (1989), while reviewing the psychometric properties of the PBI, states that while care is a distinctly homogenous dimension, the PBI protection was somewhat more heterogeneous, presumably because that scale subsumes constructs such as control, infantilisation, intrusion and encouragement of dependency. It has also been suggested that notions of independence, control and discipline are important in assessing parenting but the

aspect of overcontrol by parents presented in PBI might not always have a negative connotation (Gomez-Beneyto et al., 1993). For example, parental autonomy granting may be particularly important in cultures where independent thought and action is greatly valued, but may not be as important in cultures where obedient behavior for the daughter is the desired norm such as Pakistan. According to Parker (1983), overprotection slows or restricts the usual separation-individuation process, so creating socialization difficulties. Perhaps in cultures where child rearing does not stress the development of individualistic independence in the girl child, the content, validity and utility of the overprotection concept need to be re-examined. For example, 'strictness' interpreted negatively by the western child 'may be equated with parental concern, caring and involvement' by the oriental child (Chao, 1994; Rohner and Pettengill, 1985). This has been shown to be especially true for girls in Bangladesh (Stewart et al., 2000b). It might be plausible then that among Pakistani women overprotection holds different connotations contingent upon their socioeconomic status. Take for example a girl from low SES who is not allowed to pursue high school education because of her mother's concern for her safety in commuting alone to the school, conversely a girl from high SES also experiences overprotection but perhaps more positively in that she is escorted either by a family member or the chauffeur to her school. It is evident that the impact and interpretation of overprotection would be radically different in the two situations. It might be that there are mediators or confounders such as helplessness (Seligman, 1975), or negative self-concept (Brown and Harris, 1978) known to have been associated with depression that may well have been independently associated with overprotection especially for low SES area women. These aspects could not have been accommodated in the present study, moreover, we could not include the father's role

in overprotecting his daughter perhaps that is yet another significant dimension that needs to be addressed in future work, especially given the patriarchal environment of Pakistan.

It is recommended, if the role of overprotection is to be studied in future research in Pakistan, that the meaning and relevance of the concept be re-evaluated using qualitative methods, among families of differing socio-economic status.

5.3.4 Education

In our study we found that even after adjusting for all the potential confounders, marital status, employment outside of home, life events, social support, city of residence, household wealth and emancipation the association between fewer than 12 years of education and CMD was statistically significant 1.8 (1.1-3.0) p= 0.03. Household wealth was observed to be the main confounder and will be further discussed in a later section addressing our third hypothesis (see also section 4.6.3.2).

Educational attainment was one of the more objective proxy measures for assessing gender disadvantage in our theoretical paradigm, it seems improbable that it would render a differential error, that is women who were scoring high on the SRQ-20 would be more disposed to underestimate their educational attainment. Similarly, the objective nature of this proxy measure does not lend itself to interviewer bias. Furthermore, as discussed earlier in the main hypothesis, the purpose of the study was not overtly obvious to the respondents or the interviewers.

As with any cross sectional study design, we are unable to provide a definite direction of causality. However, present CMD should not have caused low educational attainment. Others have contested that reverse causality would not be a contributing factor, especially for primary and secondary education, since it occurs in early childhood when mental disorders are uncommon (Ludermir and Lewis, 2001).

However, it might be argued that other issues not assessed in our study, such as neuroticism, or learning disability might have precluded women from pursuing education. These issues might also be associated with current mental health in such a way as to make them potential confounders, or more likely, mediators of the association. Similarly since education permits greater choice in life decisions and has a positive influence on one's aspirations and self-image (Brown et al., 1986). It is also plausible that other aspects such as lack of freedom or low self-esteem were also independently associated with educational achievement, or perhaps created a vicious cycle between low educational achievement and CMD. Logistic constraints did not allow us to delve into these aspects however; future work might allow us to incorporate these dimensions as well in order to better elucidate the causal mechanism. Though several confounders were incorporated meticulously in this study, the list cannot be all-inclusive.

In our findings, education is associated with other gender disadvantage indicators, this reveals a strong concurrent validity for it as a proxy for assessing gender disadvantage. Contrary to what we had hypothesized having an older brother was associated with low educational attainment. This merits some attention, it might be

that the household resources, including education are made less available to the daughter if there is an older son. In hindsight this seems a more logical possibility given the patriarchal norms prevalent in Pakistan, and would require further exploration in the future.

In terms of concrete observational outcomes of gender disparity, lack of educational opportunity and low educational achievement among girls is probably one of the most blatant indicators, particularly in the developing world (Jacobson, 1993). The evidence may be seen in the prominence given to educational equity in the United Nations Millennium Development Goals and the Dakar frame-work for action, both adopted in 2000. Pakistan has been signified as one of the most sluggish in its achievement towards this goal (UNESCO, 2004), this will be discussed further under interventions.

Low levels of education have consistently been shown as a risk factor for CMD. Findings from some middle-income countries have demonstrated a dose-response relationship between educational level and CMD (Araya et al., 2001). Patel et al (1999) undertook an analysis of mental health, as indicated by CMD, in four lower income countries. Data was obtained from primary care attendees in Goa, India, Harare, Zimbabwe and Santiago, Chile and community samples from Pelotas and Olinda, both in Brazil. Strong, common associations were found across these data sets between education and CMD. A recent systematic review of research conducted in Pakistan (Mirza and Jenkins 2004), revealed an inverse association between level of education and CMD, in four out of five population based studies cited and among the

three primary care studies two found the same. The evidence provided in this study is consistent with other findings in the developing world as well as within Pakistan.

From the public health perspective, the most powerful implications of identifying low education as a risk factor for CMD is that it is potentially preventable. There are positive examples from South Asia, for example Sri Lanka, which regained independence from the British Empire, almost at the same time as Pakistan. She invested heavily in education and health, making them the corner stone of socio-economic development (Bhutta, 2004). The results are reflected in the impressive overall health status of the population, a paucity of evidence of female disadvantage and high literacy. For the above reasons it was excluded from a review of female gender disadvantage in health in South Asia (Fikree and Pasha, 2004). This accentuates the strong impact of improved education on improving female gender disadvantage and their mental well-being. This aspect will be discussed in more detail in the intervention section.

5.3.5 Age at Marriage

The next gender disadvantage indicator assessed in our model was age at marriage. The association between women married before the age of 20 years and CMD no longer remained significant (table 4.38), after having adjusted for all the potential confounders; employment outside of home, life events, social support, city of residence, household wealth and emancipation 1.5 (0.8-3.1) p= 0.23. As discussed in section 4.6.3.3, the main confounder was household wealth. We shall address this aspect later in the discussion of our third hypothesis along with educational achievement. While not statistically significant, there is a strong trend, and the

possibility of an important independent effect of this variable cannot be excluded. In our estimate age at marriage was also one of the more objective proxy assessments of gender disadvantage and therefore less susceptible to recall bias. It seems unlikely that women who were currently depressed or were potential cases would be more disposed to reporting a lower age of marriage compared to their counterparts. It is however, possible that women in general did not want to reveal their real age of marriage, especially if they got married late according to the familial or cultural norms. In order to diminish this occurrence we had included several other questions addressing the same, such as number of years the participant had been married, age of all children etc. This strategy might also have reduced any likelihood of the interviewers introducing both, a differential or a non- differential bias.

It seems unlikely that present psychiatric state of the participants would have caused them to get married at an earlier age. However, it might be argued that women who did not fit the atypical profile of an attractive girl, that is slim and fair complexioned (see lit review section 1.9.3), would be at risk of fewer proposals and parents would therefore be tempted to get her married off at an earlier age to avail the advantage of her youth. Therefore, low physical attractiveness, as well as low self-esteem may perhaps be along the causal pathway or they could be confounding this association. These issues could not be taken into account in the present study. However, they do warrant attention and may be integrated in future research addressing marital circumstances and gender disadvantage. Another confounder that was not included in this study but might be vital in comprehending the women's state of mind is her decision-making power or lack of it within the family vis-à-vis the issue of marriage.

It seems that an extensive qualitative research would best elicit these intricate facets, that might then be followed by further, more targeted quantitative research.

In our life course gender disadvantage paradigm, age at marriage was associated with most of the other gender disadvantage indicators, indicating it to be a valid measure, addressing gender bias. However, opposite to the hypothesized direction of the association, we found that women who had an older brother were more likely to get married at an earlier age. This might imply that the presence of an older brother perhaps augments the woman's disadvantage, as part of the recurring patriarchal theme, at least in this juncture of her life.

Lower age at marriage has been repeatedly shown to be an indicator of gender disadvantage in several parts of the world. For example, Wilson (2004), in their report on human rights: *promoting gender equality in and through education*, documented that in parts of Asia more girls than boys are married between the ages of 15-19; in Afghanistan 54% girls compared to 9% boys, in Bangladesh 51% girls compared to 5% boys, in Nepal 42% girls compared to 14% boys. In Sub-Saharan Africa an even higher percentage of girls in this age group were married for example, D.R. Congo 74% of girls compared to 5% of boys and in Niger 70% of girls as opposed to 4% of boys. In the above report, lower age of marriage and lower educational attainment were shown to be inextricable, meriting collective attention. This provides validity to our theoretical paradigm as well as the associations demonstrated between gender disadvantage indicators (figure 5.1). Other studies in diverse cultures have also made this point. For example in Albania and Tajikistan, Magno et al (2002) in their research found that poor families endorse early marriage of girls in order to lighten

the family's economic burden, and in these circumstances, early marriage (at age 15 or 16) becomes a reason to leave school. In Southern Africa, the cultural practice of bride price that is educated girls may attract a higher bride price for the family, inadvertently acts as an incentive to educate girls (UNESCO, 2004). While education might improve prospects for girls in the marriage market, it is often used purely as a means to that end (Jeffery and Basu, 1996; Jeffery et al., 2003), with no particular advantage for the girl. In some parts of India the vital eligibility for marriage for a girl is her youthfulness above all other considerations, thus acting as a deterrent on investments on her education (Palriwala, 2003). In the present study we have demonstrated a strong positive linear association between education and age at marriage. That is to say, none of the women who were married before the age of 20 years had completed 12 years of schooling. A study conducted in Syria revealed that the more years of education a woman had the later they were likely to get married (Maziak et al., 2002). Previous research from Pakistan has also demonstrated that primary or secondary schooling compared to no schooling increases the average age of marriage among women (Jeffery and Basu, 1996).

Examining the risk factors of psychiatric morbidity, in Syria, Maziak et al (2002), demonstrated a modest association between early age at marriage and CMD as assessed by $\geq$ 12 on the SRQ-20. Maziak (1999, 2000), points out a dearth of evidence with regard to early age at marriage and its risk of psychiatric morbidity in the Middle East. Previous studies in Pakistan have demonstrated an association between lower age at marriage and psychiatric morbidity (Naeem, 1992). However, in a recent meta analysis on available research on mental health in Pakistan Mirza and Jenkins (2004), do not cite this as one of the major risk factors, though most studies

found an inverse association with education. One explanation could be that in Pakistan early age at marriage is entwined with fewer years of education and is perhaps a corollary of it or vice versa, and hence is overlooked in research as a key element of gender disadvantage, and, perhaps, as an independent risk factor for CMD. The significance of identifying early age at marriage as a risk for CMD is that it is amenable to intervention, through general education, or awareness raising of women and their families regarding risk of early marriage on the women, such as complicated child birth (Belsey, 1998). This will be further discussed in the interventions section.

5.3.6 Marital Satisfaction

Marital satisfaction was the final proxy indicator assessing the life course experience of gender disadvantage. As is evident in Table 4.38, the association between marital satisfaction and CMD appears to be impervious to our list of confounders. The unadjusted odds 0.7 (0.7-0.8) $p<0.0001$ were identical to the final adjusted odds after exhausting all possible confounders; employment outside of home, life events, social support, city of residence, household wealth and emancipation.

In the previous discussion of: low care, high over protection, level of educational achievement, or age at marriage, we had contested that it was unlikely that current CMD could have caused them since they had all, by definition preceded the outcome, and addressed an earlier era of life. The exception in the life course causal pathway was marital satisfaction; it addresses the current marital relationship of the participants and its association with the present mental health. Even if we were to accept the validity of the Marital Satisfaction Scale despite its lack of validation in

Pakistan (see earlier section, 5.1.4.3), measuring both exposure and outcome simultaneously augments the prospect of recall bias, and reverse causality.

Let us first address bias. It is possible that women suffering from current psychiatric morbidity were disposed to recount more unpleasant experiences in their marriage as a consequence of their psychological state, thus biasing our findings. However, the fact that marital dissatisfaction was associated as hypothesized with each of the other gender disadvantage proxy measures with the exception of sibship, provides some support to the notion that the findings are not entirely spurious. One other study has reported an association in women between recollection of care received during childhood (as determined through PBI care subscale) and current marital quality, after controlling for neuroticism and past psychiatric history (Truant et al., 1987).

The very strength of the association between CMD and marital dissatisfaction in our study, coupled with the odd bimodal distribution of marital satisfaction scores should raise concerns about the validity of the reported association. It should be noted, however, that while the association was very strong, the variables were not collinear, with the SRQ score accounting for about 50% of the variance in marital satisfaction, and vice versa.

In our study, we had included a list of potential confounders pertaining only to married women; abortion, parity, gender of offspring, interval between marriage and birth of first child; but did not find them confounding the association between gender disadvantage and CMD. However, there were several aspects pertaining to the complex phenomenon of marital satisfaction that could not be included in the present

research, for example domestic violence. It has been suggested that in developing countries, more than one half of women are physically abused by a present or former male partner (Heise et al., 1994). Fikree and Bhatti (1999) have suggested that in examining social dimensions of CMD violence within marriage must be incorporated for the married women. We also did not include marital interaction, an interpersonal aspect of marriage, in particular the behaviors that spouses exchange during problem-solving discussions, considered to be vital in understanding conjugal relations (Bradbury and Karney, 1993; Weiss and Heyman, 1990). Yet another criticism that could be levied on this study is that it does not involve husbands in the assessment of marital relations. We therefore do not claim an exhaustive analysis of marital satisfaction in Pakistan.

Turning now to the issue of reverse causality, as stated earlier in this section, the synchronous assessment of both exposure and outcome makes it plausible that current depression itself contributed negatively to the marital relationship thus introducing the peril of reverse causality. There is however evidence indicating that marital discord predicts relapse of major depression (Lewinsohn et al., 1988; Hooley et al., 1986). Beach and O'Leary (1993), in their longitudinal study examined marital variables prior to marriage, at 6 months after marriage and at 18 months after marriage. They found marital satisfaction to predict later incidence of depression after controlling for prior history of earlier episodes. Fincham et al (1997), in another longitudinal study, used structural equation modeling to demonstrate causal pathways from marital satisfaction to depression in women, and from depression to marital disatisfaction in men.

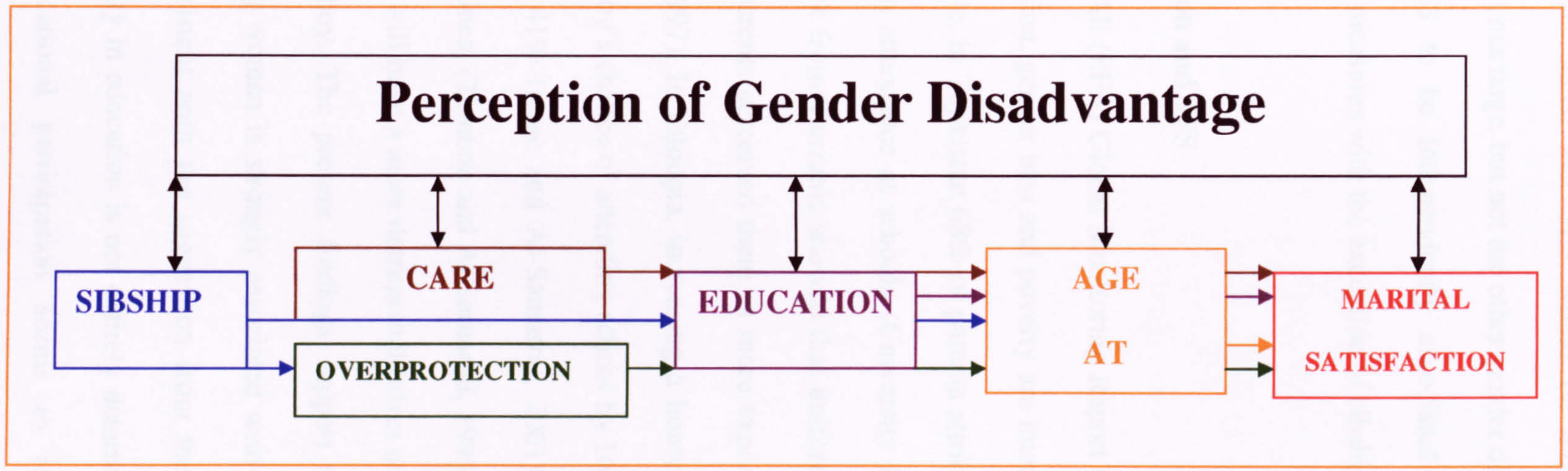
To our knowledge marital satisfaction per se has not been examined as a proxy for gender disadvantage previously. It has been presented in the literature review that the traits of dependency, demureness, and self sacrifice are encouraged in Pakistani women, whether or not they represent the latent trait of gender disadvantage needs to be explored in future work.

Previous studies from Pakistan have indicated marital relations to be associated with psychiatric morbidity. Aspects of marital relation found to be associated with CMD are; absence of confiding relationship with husband (Naeem, 1992) relational problems with in-laws (Bender, 2001), marital disputes with husband and in-laws (Rabbani and Raja; 2000), and verbal abuse by in-laws (Rabbani, 1999). Husain et al (1997), found an association between depression and marital difficulties among women of Pakistani origin living in UK. In the same population Merrill and Owens (1986), found that three quarters of the married Asian women seen following deliberate self-harm reported marital problems. Khan and Reza (1998), found a predominance of married women among those attempting suicide and the most frequent reasons reported for the suicidal act was conflict with husband or in-laws. None of these studies have examined marital satisfaction as experienced by the woman. The marital satisfaction scale used in our study has not been previously used either in Pakistan or in other developing countries. An attempt to validate the construct of marital satisfaction was made in the pilot study (see pilot study results, section iii) the findings supported the use of this measure of assessment. Women were asked to express what entailed marital satisfaction for them in a qualitative manner and the themes elicited in this qualitative narrative were very similar to those addressed in the marital satisfaction scale. It was therefore deduced that its use was

appropriate within the Pakistani cultural context. However, the questions pertaining to intimate physical relations were not as well received, perhaps because the questions were not entirely comprehended, such as 'my spouse satisfies me sexually', hence these questions were excluded for the main study.

It might not have precisely captured all the cultural issues relevant to Pakistani women's marital satisfaction, but perhaps the strength of these findings is that they endorse the significance of marital satisfaction in a Pakistani woman's life, and encourages future work to unravel the complexities within this domain.

Figure 5.1 : Observed Associations between GD Indicators



5.4 Support For Third Hypothesis

The third hypothesis stated that SES would be independently associated with education and age at marriage, but not the other gender disadvantage indicators. In the event I found SES to be independently associated with each of the gender disadvantage proxy measures with the exception of sibship.

5.4.1 Education and SES

The Education for All (EFA) Global Monitoring Report (UNESCO, 2004), explicitly presents that education, gender bias and poverty are intertwined issues in developing regions. For example, in Tajikistan 68% of parents attributed poverty as the primary cause for girl's non attendance at schools (University Degree Women Association 2002). Recent work from Tanzania showed that uniforms were the most expensive cost item and the parents perceived them as more expensive for girls than for boys (Peasgood et al., 1997). In Ethiopia, increasing a household's wealth index by one unit increased the boy's chance of attending school by 16%, whereas, a girl's chances were increased by 41% (Rose and Al-Samarrai, 2001), the same effect has been demonstrated in Guinea, (Tembon and Al Samarrai, 1999). These results indicate that poverty in a family will have a more detrimental effect on the decision to enroll a girl in school than a boy. The present findings support the notion that educational achievement among women is strongly associated with their socioeconomic status. They are also consistent with the suggestion from the EFA program (UNESCO, 2004), that inequality in education is not entirely determined by poverty, in that the inequality in educational participation seems to reflect broader inequalities

particularly in societies where gender bias persists. The possible implications of this will be further discussed under the interventions.

5.4.2 Age at Marriage and SES

There are studies which ascertain direct, indirect and joint effect of socio economic factors on the age at marriage of females in rural and urban areas (Haq, 2000). Though literacy is the dominant factor influencing age at marriage, poverty also is a significant predictor (Pandey, 1984). The findings of the current study support the notion that marriage at an early age is strongly associated with their socio economic status.

Early age at marriage does not appear to be contingent only upon familial socio economic circumstances. It has been observed that families perceive their daughters' early and appropriate marriage to signify their own well being. A consideration being avoiding any promiscuous behavior on the girls' part if she is left unmarried for too long, for example it may create risks of premarital pregnancy (Singh and Samara, 1996).

A study conducted by Thapa et al (2000) suggests that the causal relationships between lack of education, early marriage, low social status and poverty may be circular rather than linear. It has been observed that early age at marriage and consequent early childbirth, exacerbated by poverty, are likely to lead to poor health outcomes for both the mother and the child (Hobcraft, 1987; Mensch et al., 1998; Senderowitz, 1995).

5.5 Implication for Public Health and Prevention

5.5.1 Primary Prevention

The causal pathway of gender disadvantage demonstrated in this study indicates that the effect of all the proxy measures for gender disadvantage across the life course cluster together and are mutually reinforcing. The inextricable intertwining of the experience of gender disadvantage from birth resulting in low care, high overprotection, low educational attainment, early age at marriage and marital dissatisfaction associated with CMD makes it imperative that a multi pronged strategy be deployed to systematically address women's mental health problems in Pakistan. This means that preventions and interventions will have to be guided by an interdisciplinary perspective. In addressing issues concerning women and girl children government should promote an active and visible policy of mainstreaming gender perspectives into all policies and programs emphasizing that gender disadvantage as experienced by women contributes to the global burden of CMD. It has been suggested that governments need to ensure that all relevant agencies are aware of the importance of mental health, and of the influence that their activities can have on mental health, and then to ensure that appropriate coordination between relevant agencies takes place (Jenkins et al., 1998).

In this section, I will therefore discuss both prevention and interventions with reference to life course phenomena, intervening at different life stages at population and individual level.

The findings of the present study cannot be expected to change the existing cultural norms, or induce change among mothers and families raising daughters, it can however, initiate a process of recognizing the risk of gender disadvantage experienced by women as one of the risk factors for CMD, as well as an indicator for the economic deprivation within the country.

5.5.1.1 Gender Disadvantage at Birth

The Government of Pakistan recognizes that a girl child faces discrimination early in life, starting at her birth, which is generally uncelebrated (National Plan of Action, GOP, 1998). The establishment of a National Commission on Status of Women is a realization on the government's part of the need to improve the existing status and condition of women. One of the aims of the commission is to strengthen the position of the girl child. However, on ground the situation has not changed substantially (Haq, 2000). The Government of Pakistan in its policies pertaining to women's health and well-being has focused on general issues of gender disadvantage between boy and girl children.

One of the areas that can be improved with the government intervention both at policy and practice level is the strategy for population census. Female enumerators might have better access to women in each household and will probably be able to gather more precise data on child care, for example immunization over the first five years of life. This process would help identify high risk women with several daughters, and an outreach program could be set up to improve mother and child health.

At the macro level the government could facilitate parental favorable reception of the birth of their daughter for her to receive equal love and care. This would require awareness raising, educating and enlightening of the parents particularly the mother. This could be achieved via awareness raising programs for example electronic media, such as popular drama (soaps), dialogues and talk shows through television, and radio programs on the same format. For low SES population who do not have an access to television, the same can also be achieved through print media.

Lady health workers are employed and trained by the health department, to provide basic health care, including assistance with childbirth for rural populations, which do not have an access to health facilities in the form of hospitals and doctors. They have an access and influence on the mothers both at antenatal and postnatal stage, and are therefore another resource that could be recruited into the awareness raising strategy by the government. They could be trained to provide support, counseling and advice to mothers regarding future prospects for their daughters through proper care and equal educational opportunities. These lady health workers might also assist in identifying a high-risk population of pregnant women who already have a daughter and do not want another girl child. A recent study in India (Patel et al., 2002) on pregnant women demonstrated that giving birth to a daughter was a significant risk factor for postnatal depression. Rahman et al (2003a), in a study in Pakistan also found some evidence for an increased risk of depression among women who have two or more female children. These, high risk mothers and perhaps the father and the household could be targeted for individual and family counseling by community health workers. A randomized controlled trial, currently in progress in India is assessing the impact of counseling in the antenatal and immediate postnatal period

upon maternal and child health outcomes. Early evidence from the trial suggests a high compliance rate with the intervention (Marcus Hughes, personal communication). These trials could be replicated in Pakistan to assess their applicability and significance. The aspect of mother's mental health influencing the daughter's health also needs to be examined in future research. However, there is compelling evidence that maternal depression adversely affects the psychological and intellectual development of their children (Cooper and Murray, 1998) and their physical growth (Frank and Zeisel, 1988). Therefore in a recent debate on maternal health and its effect on the infant's growth Patel et al (2004) advocated interventions that target maternal mental health and child-focused interventions. It might be appropriate to integrate the risk of gender bias into international programs of child care such as the World Health Organization's Integrated Management of Childhood Illness strategy (UNICEF, 1998).

5.5.1.2 Care

Care provided by parents particularly mothers to the baby girl could be categorized into objective and subjective care, the objective and measurable aspects of care could be addressed at population level by the government through compulsory immunization for girls along with boys, monitoring their birth weight by providing dispensaries or mobile health units in communities. Furthermore, periodical checkups of female babies could be made compulsory at the local dispensary for early detection of nutritional deficiencies, in an attempt to avoid serious consequences, including possible death of the girl child. Government should introduce and enforce legislations on rights to health of a girl child including access to preventive and curative health. The government could educate parents to sensitize them on survival protection and

development of girl child on equality with boys. They should familiarize the population with the concept of post natal care, child nutrition, immunization, and freedom from abuse and neglect.

Women have been known to breast feed boys more frequently and for longer periods than girls in Pakistan (Haq, 2000); perhaps the reproductive health services package developed by the government of Pakistan aimed to deliver services at the door step, particularly in the rural areas through lady health workers and village based family planning could be trained to encourage mothers to provide equal care for their daughters. This service could also provide supplementary food or nutritional supplements for mothers and their daughters and this might help negate the blame of giving birth to a baby girl by the family. In Pakistan 48% of lactating mothers have a caloric intake of less than 70% of the recommended level (Qureishi et al., 1999), furthermore, women particularly pregnant women are discouraged from eating eggs and fruits (PMRC, 1998). In order for the mother to provide her daughter with good care she must first be treated well by her family and not be accused for giving birth to a girl instead of a boy. The outreach programs set up by the government could help in raising awareness of the entire family at the antenatal stage of pregnancy that the woman is biologically not responsible for the sex of the baby. If this strategy is adopted by the government, the response of communities might be better than if private individuals (e.g. NGO workers) approached the indigenous population, given the sensitive nature of the issue.

For the subjective dimension of care, awareness raising strategies could be adopted both at the government and the non-government level. For example seminars,

conferences, and workshops at national level could highlight the negative consequences of lack of care, such as risk of CMD, and the long term effect of repetitive cycle of gender disadvantage continuing through into next generations. Electronic and print media could effectively highlight the comparison between women who are raised in a caring environment and those who are relatively neglected. Potential for intersectoral approaches should be explored; for example the Ministry of Social Welfare could collaborate with the Ministry of Education in developing recreational and educational activities for mothers and daughters to enhance the channels of communication and to bridge the generational gap between them. This might assist in providing exclusive quality time by mothers to daughters.

5.5.1.3 Education

Education is the key to breaking the vicious cycle of ignorance and exploitation and empowering women and girls to improve their lives. It is one of the most powerful levers for weakening the forces that lead to inequalities between the sexes. Targeting women in general implies educating future mothers, therefore this could be one of the most vital and achievable preventive interventions in breaking the cycle of gender disadvantage. For example it has been shown that female literacy was the strongest independent predictor of child mortality in India (Sen, 1999). It has also been suggested that educated mothers are more likely to send both girls and boys to school and to keep them in school longer (Jeffery and Basu, 1996). The government can play a fundamental role in promoting gender equity by providing equal opportunities for girls and overcoming barriers that might preclude parents from sending their daughters to school, such as non availability of single sex schools with female teachers easily accessible within communities. Policies can be designed specifically to

train and encourage female teachers, and to provide single sex schools in all neighborhoods with a focus on reducing the distance between home and school in order to ensure security concerns of parents.

In South Asia, including Pakistan, variations in gender inequality in education partly mirror the patriarchal society itself (Dyson and Moore, 1983; Miller, 1981). It is for this reason that Pakistan is atrociously lagging behind in trying to eliminate gender disparity in primary and secondary education by 2005. She is not likely to achieve gender equality in education by 2015, a target set by Education for All (EFA) in 2000 as part of the millennium development goals, which state, 'Eliminating gender disparities in primary and secondary education by 2005, and achieving gender equality in education by 2015, with a focus on ensuring girls' full and equal access to and achievement in basic education of good quality (UNESCO, 2004).

Besides the issue of inadequate supply of schools and educational institutes, low female participation in the educational system could also be attributed to low parental demand for girl's schooling. One of the most significant factors that inhibit women's access to education in South Asia is the perception that the investment in educating a girl will not benefit her parents once she gets married. When decisions are made regarding the relevance of schooling, and regarding which children to send to school, girls are likely to suffer the most. In Ethiopia, increasing a household's wealth index by one unit increases a boy's chances of attending school by 16%, whereas a girl's chances are increased by 41% (Rose and Al-Samarrai, 2001). These results indicate that poverty in a family will have a more detrimental effect on the decision to enroll a girl in school than a boy. Therefore, government policies can be designed specifically

to change the balance of incentives that lead to girls, in particular, being excluded from school. Such as scholarships, income-support schemes and school feeding programs.

The 2004 EFA report on six countries demonstrated that lack of money was the primary constraint for non attendance. Despite evidence from many human rights instruments, ratified by the vast majority of nations, which commit states to the provision of free and compulsory education at primary level, school fees continue to be levied in several countries including Pakistan (UNESCO, 2004). There is evidence indicating that government announcements for free primary and secondary education may be very well received. For example, in Nairobi, Kenya such an announcement resulted in doubling or more of number of students.

Non government programs (NGOs) can be major contributors and are generally committed to ensuring that education reaches the poorest, most disadvantaged groups. In Bangladesh for example, the rise in total primary enrolments over the 1990's and the reversal of the gender gap has had much to do with non government managed schools, such as the Bangladesh rural advancement committee (BRAC), which ensures that 70% of its students are both girls and from poorer families (EFA, 2003/2004). The success of such organizations induces hope in that the goals are achievable if proper collaborative efforts are made at government and non government levels.

The fee aspect is only one, albeit important part of achieving parity. It seems that in South Asia, variations in poverty provide only a part of the explanation for observed

variations in education, for example, Pakistan with higher per capita income GNP than either India or Bangladesh, reports higher levels of gender inequality in access to education than either country.

The family is the critical important locus of decision making regarding school attendance. It is here that notions of gender relations are transmitted from one generation to the next. This may happen implicitly via the gender roles that members of the household themselves fulfill, and explicitly by consequence of the gender frameworks with which children of each sex are brought up. Since the decisions made by the households are influenced by the broad social and institutional framework of custom and opportunity in which they are located, changing the factors that affect household constraints, opportunities and incentives is a critically important means of influencing their decision making. The mother has to be targeted for appreciating the significance of higher education for her daughter not as a threat to social norms but to a better and complete existence with economic independence.

This suggests that the awareness raising efforts again have to be continuous across the spectrum of social diversity. This is why promoting the importance and benefit of girl's education for all socio economic sectors through campaigns, role models, and working directly with adolescent girls to strengthen their voice, are important measures to allow women to pursue education and to complete higher education. Counseling in schools may encourage girls to continue education and to take diverse subjects to aspire for a future career. Parent teacher meetings could provide peer influence to encourage parents to educate their daughters.

Patel (2001), has suggested that the main risk for mental health is more likely to result from a lack of secondary school education (10-12 years of schooling). Therefore strategies for education need to prevent attrition prior to the completion of secondary school, this might be enforced by the government in order to reduce the risk of early age at marriage (carrying with it, as we have shown, an increased risk of psychiatric morbidity).

5.5.1.4 Age at Marriage

The issue of early marriage is embedded in the socio-cultural milieu of Pakistan. In comparison with other developing countries this issue is compounded with the fact that Pakistan is an Islamic state where religious practices are an influencing factor on the existing family laws. According to Islam the girl is eligible for marriage at menarche; however, the Government of Pakistan has introduced and enforced the Muslim family law ordinance (MFLO) where marriage of minor girls is prohibited. As a result of this conflict, the enforcement and implementation of the same has not been achieved entirely. In such circumstances changing the legal age of marriage by the government is unlikely to alter practices if underlying conditions are not changed. A preventive measure adopted by the government to safeguard women was the introduction of marriage registration along with the religious ceremony. This requires written consent of the prospective bride on the marriage certificate (nikah nama), and complete details including age, marital status, and competence of the intended spouse. However, yet again the implementation is not very effective. The government in its national plan of action has introduced the concept of training women as marriage registrar (nikah registrars) for better enactment of the law. The successful implementation of these policies is only possible if law enforcement agencies monitor

activities such as decisions taken by parents of minor girls, community consultative courts (*Biradari*, *Jirga* and *Panchayat*) and the government levies a heavy fine on the parents of the girl child who break the law and marry their daughter before they come of age.

The government could integrate early age at marriage and its possible implications on mother and child's health, fertility programs or the like in order to raise awareness pertaining to the adverse effects of early marriage. The government needs to devise a strategy to gain access to closed communities especially the rural population, where such practices are more prevalent. A workforce of community workers needs to be trained for a sustained effort to break the cycle of gender disadvantage at this juncture.

Household decisions to send children to school are strongly influenced by the economic, social and cultural contexts in which they find themselves. Many parents recognize that existing social conditions are often unsupportive of those girls and women who offend social norms, and those seeking higher education might implicitly be doing exactly that. Societies where female autonomy is considered unstable or risky, early marriage is used as a means of securing daughters futures. Data from India for 1996 show that 38% of girls aged 15-19 years were married. In these circumstances, early marriage becomes a reason to leave school (Magno et al., 2002). As is seen in our study none of the women who got married before the age of 20 reported having completed 12 years of education. Early marriage predominantly impedes the educational progress of girls whether it occurs so as to lighten the family's economic burden or to secure a daughter's future. In Pakistan the need to

arrange a match with a boy at least as educated as the girl often induce parents to withdraw girls from school at an early age to get them married off as soon as possible. For example in Ethiopia fathers noted that more educated girls face problems because they cannot find a husband or employment opportunities, they would therefore get older, have to stay at home with their parents and bring shame upon the family; thus the only options for these unmarried girls would be to migrate to bigger towns to lead miserable lives (Colclough et al., 2003). The non government, social welfare sector can play a more active role in this situation where techniques like street theatre can be adopted to communicate the message effectively. Street theatres could also address the practice of dowry, which has been shown to be a depressant on investments in a daughter (Palriwala, 2003) resulting in a heedless early marriage. Outreach programs, campaigns and role models could all focus on presenting viable options for young women.

A successful intervention was mounted by the BRAC non government organization in Bangladesh. In an aim to increase girls' enrolment and retention in secondary schooling, they provided them with stipends, the criteria for which is to attend 75% of the school year, achieve certain grades and remain unmarried. In attaining these goals they assist them in passing final examinations, enhance their employment opportunities and delay their marriages.

Those women who got married at an earlier age could be identified through outreach programs by trained counselors who might then target them specifically for counseling pertaining to their physical and mental health and also guide them about their children and specifically their daughter's health. This might help break the cycle

of early marriages by these mothers if they are made aware of the potential negative consequences of an early marriage as well as possible alternatives to it, such as education leading to economic independence for women, this might encourage them to reconsider marrying their daughters at an early age.

Early intervention among adolescents with mental disorders could be of great value in reducing the documented adverse effects of adolescent mental disorders on such critical life course transitions as educational attainment, teenage child bearing, and timing of marriage (Kessler et al., 1995).

5.5.1.5 Marital Satisfaction

The concept of marital dissatisfaction is not recognized in Pakistani society and subsequently the prevention or intervention has not been explored previously. Therefore, I would like to present the background that might allow prevention at the familial and cultural level. Interventions will be discussed in the following section.

In Islam, a woman has been given the option of seeing her prospective husband and her consent is a prerequisite for matrimony. Though Islam sanctions women the right to seek divorce but it is considered an abhorrent act. This notion is further endorsed by the mother, the family and the society in general. Keeping this in view many marriages which take place in the country deprive the women of her basic right of consent, consequently the girl may be married off to a man whom she dislikes physically but must endure for the rest of her life. This might result in a dissatisfied marriage, where the woman cannot voice her reservation to her parents or her family. Similarly, she might encounter the same negative feelings and reservations at some

later stage of her married life because of a lack of communication, lack of emotional and intellectual compatibility, or more serious problems such as physical or emotional abuse by the husband or his family. At this stage however, the option of divorce is no longer made available to her by the family or society. The scenario might be further aggravated if the woman is not educated and is economically dependent on her husband. This does not allow her to avail the option of estrangement or divorce on her own. As discussed in the background section the family does not encourage married women to come back and live with them for extended periods let alone after divorce.

Women in general could be targeted through awareness raising programs that might help draw out those women who were unable to avail the option of divorce and endured an unhappy married life. These women could then be targeted to break the vicious cycle of gender disadvantage at different stages of their daughter's life, specifically in encouraging their daughters to pursue education, ensure that they are happy with the prospective husband before marrying them off, and providing unconditional support to their daughters vis-à-vis the consequences of her marriage. Not with the intention of encouraging divorce but to relieve them of the sense of helplessness and entrapment that they might experience, for fear of bringing shame to their families, particularly to their mothers.

Bringing the issue of marital dissatisfaction into public awareness, by focusing upon its adverse impact upon woman's mental health may be one of the first steps in better understanding the problem itself. This might then elicit actions that could be taken by the government, non government and health providers. Strategies such as community

dialogues, street theatre, and popular literature can be used to focus on mothers in particular and women in general.

The fact that mothers are the primary care givers signifies that they might be instrumental in changing future choices made available to their daughters. This could be achieved through electronic media such as TV dramas (soaps), radio programs aiming directly to mothers focusing on presenting future prospects for their daughters. For example projecting positively, a young woman, who broke out of an abusive relationship and is dealing with the social shame because of her mother's support. Furthermore, young women who are educated and economically independent could be shown as independently successful and happy in an egalitarian marriage.

5.5.2 Secondary Prevention (Interventions)

Turning now to the issue of treatment for women suffering from CMD, It has been shown that women with mental health problems are less likely to receive appropriate health care, and when they do seek help they are faced with a gender bias that ensures that their symptoms are taken less seriously than men (Davar, 1999; Malik, 1993). Gender based barriers to mental health care, especially cost and access, bias and discrimination must be removed.

Several factors might hinder Pakistani women from seeking health care. The stigma attached to mental health disorders is likely to prevent women from seeking help for concerns around family issues, such as parents fear that their daughter might not get appropriate proposals, or married women might be anxious about their husband's and in-laws response. These concerns are further compounded if the woman is concerned

about confidentiality issues and fears that her intimate details might be revealed to other family members or friends. Given the cultural milieu of Pakistan it may be anticipated that women do not seek professional help for fear of having to interact with males or traveling alone away from home to seek health care. Some women might feel that it is a minor problem that should have been dealt with by them and that perhaps no one else can help them. Economic dependence might also play a role in women not seeking help especially for themselves.

There are several strategies that need to be adopted and enforced in order to alleviate these obstacles. A general awareness raising of the population is required at the government level about the gravity and impact of CMD on women's health and emphasis should be made on the fact that it is curable. Leaflets, brochures and posters could be made available at all clinics emphasizing the above.

The concept of 'meaningful assistance' in mental health care needs to be promoted. Meaningful assistance implies a patient centered approach. Gender disparities in mental health will not be reduced until women's own mental health concerns and life priorities are taken into account (Avotri and Walters, 1999).

Public health with a gender focus should be introduced as a subject in all educational institutions and be incorporated into the compulsory curriculum in medical schools, and institutes training psychologists and social workers. A module on ethics and privacy should be made compulsory for all practicing clinicians in order to accentuate the significance of confidentiality; any violation of it should be penalized by the ethics committee. With regard to the doctor patient relationship, preferred health care

providers are those who show a sense of concern and respect and are willing to talk and spend time with patients. The doctor should be able to identify the symptoms and acknowledge the presenting problem and should not minimize it by generalizing all symptoms to physical stress and emotional distress. For example as is practiced and observed in most developing countries, a general practitioner usually prescribes sedatives or relaxants for such complaints.

As stated earlier, some women do not seek professional help because of the unavailability of female health workers, for these women it might be that an outreach program is developed in which women from the community are trained by professionals to develop indigenous intervention, which is time and cost effective. For example reaching out to the community and providing free trained public health workers, who can go to the women if they cannot come to the clinics or hospitals. Efforts in this direction have already been proven useful, Ali et al., (2003), conducted a randomized controlled trial to examine the efficacy of community women counselors, trained by experts (in 11 sessions) to conduct short term cognitive behavioral therapy to women with CMD in their own community. The authors found encouraging results and report significant improvement of symptoms in the intervention group. A similar model might be applied as part of antenatal individual therapy focusing on each parent, with special emphasis on issues related to the birth of a female child. The model might also be replicated to include family therapy for other family members, particularly focusing on deep rooted cognitions pertaining to the anticipated disadvantage incurred by the birth of a daughter.

For the urban population with better health facilities, integrated services where social and clinical services are available on one site are preferable and will facilitate female population. Currently, the rates of detection, treatment and appropriate referral of psychological disorders in primary health care settings are negligible. Clinicians need to be sensitized and equipped to assess and respond to gender specific, structurally determined risk factors and to become proficient in providing much needed advocacy for their patients with other sectors of the health and social welfare system. Hospitals could include a screening instrument such as the SRQ-20 in the intake interview and they might also add in one or two questions pertaining to gender disadvantage such as 'did you feel that your parents would have preferred you to have been a boy' and for married pregnant women 'do you want a boy or a girl child'. This could help identify high-risk population of women who might have experienced gender disadvantage and those who might be at risk of repeating the cycle of gender disadvantage for their daughters if they do not desire their baby to be a girl. The earliest possible identification and protection of those exposed to adverse childhood events, and ideally the elimination of these events, is necessary to prevent re-victimization and arrest the progression and compounding of poor mental, physical and social health outcomes. A priority for mental health promotion and intervention programs is to incorporate a mental health focus in all program related to child health. Counseling services could be provided in educational institution to the students.

It is also important to make available marital support and therapy for women experiencing marital dissatisfaction. This is an activity that can often be usefully delivered by an NGO; therefore it is important to address effective links between primary and specialist care and NGO. This might also be achieved through private

individual practitioners such as counselors and therapists. However, the expertise could be made available but the women might not be able to avail them. One of the problems that might be encountered by women seeking marital therapy is disapproval of the family who might fear it to bring humiliation and disgrace to the family. Secondly the husband might not agree to either accompanying her in therapy or permit her to pursue it. Trained counselors could perhaps go to communities and conduct focus group discussion as a preliminary step to identify some of the problems women might be willing to discuss, and from those elicit marital problems that could be discussed collectively. Some of these might be incorporated in group therapy. For some communities group therapy might be more feasible since it might be less threatening for their families. There is evidence indicating success of group therapy in rural areas of Nepal. The intervention seemed to bring about positive change in health care for both mother and child. A locally trained facilitator was employed to convene the group activity (Manandhar et al., 2004).

To ensure that the assistance available is also meaningful to those seeking treatment, the full range of patient's psychosocial and mental health needs must be addressed. This involves services adopting a life course approach, by acknowledging current and past gender specific exposures to stressors and risks and by responding sensitively to life circumstances and ongoing gender based roles and responsibilities.

Services have to be made genuinely accessible; this includes having access to services during the weekend or evening hours, short waiting times and being on public transport routes. Recent evidence from other developing countries has demonstrated the efficacy and cost effectiveness of both psychological (Sumathipala et al., 2000)

and pharmacological interventions (Patel et al., 2003). Recently Araya et al (2003), demonstrated that women with depression responded well to a structured stepped care treatment program, led by a non-medical health worker, which included a psycho-educational group intervention, structured and systematic follow up and drug treatment. Though this study dealt with major depression, some of these components could be easily adapted to treating CMD. The study however does not provide supportive evidence for intensive psychological therapy. However, in rural Uganda Group Interpersonal psychotherapy has been shown to be efficacious in reducing depression. The intervention received by the villagers was weekly sessions of 90 minutes for 16 weeks. Patel (2000), recommended a need for generating efficacy and cost effective evidence from different regions of the world, however, he also suggests that evidence can be shared between regions that have health systems that share similar political, economic health services (Patel, 1999). Though indigenous research is highly recommended, some of these concepts could be utilized within Pakistan.

Traditional healers are common in Pakistan and despite the presence of practitioners of modern medicine, people in general and women in particular consult them routinely in the first instance. Though more research is needed, on the prevalence of psychiatric disorders, in women who consult traditional healers. Collaboration and exchange of ideas between traditional healers, physicians, and psychologists is likely to be helpful.

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Appendices

Appendix A : Parental Bonding Instrument (PBI)

The Parentel Bonding Instrument (PBI) and its scoring. Scores for the care scale are shown in Arabic numerals. Scores for the overprotection scale are shown in Roman numerals.

As you remember your MOTHER in your first 16 years would you place a tick in the most appropriate brackets next to each question.

	Very Like	*Moderately like*	*Moderately unlike*	*Very unlike*
1. Spoke to me with a warm and friendly voice	***(3)***	***(2)***	***(1)***	***( )***
2. Seemed emotionally cold to me	***( )***	***(1)***	***(2)***	***(3)***
3. Appeared to understand my problems and worries	***(3)***	***(2)***	***(1)***	***( )***
4. Enjoyed talking things over with me	***(3)***	***(2)***	***(1)***	***( )***
5. Frequently smiled at me	***(3)***	***(2)***	***(1)***	***( )***
6. Could make me feel better when I was upset	***(3)***	***(2)***	***(1)***	***( )***
7. Did not talk to me when I was upset	***( )***	***(1)***	***(2)***	***(3)***
8. Liked me to make my own decisions	***( )***	***(I)***	***(II)***	***(III)***
9. Did not want me to grow up	***(III)***	***(II)***	***(I)***	***( )***
10. Tried to control every thing I did	***(III***	***(II)***	***(I)***	***( )***
11. Tended to baby me	***(III)***	***(II)***	***(I)***	***( )***
12. Let me decide things for myself	***( )***	***(I)***	***(II)***	***(III)***
13. Tried to make me dependent on him/her	***(III)***	***(II)***	***(I)***	***( )***
14. Gave me as much freedom as I wanted	***( )***	***(I)***	***(II)***	***(III)***
15. Was overprotective of me	***(III)***	***(II)***	***(I)***	***( )***
16. Let me dress in any way I please	***( )***	***(I)***	***(II)***	***(III)***

Appendix B : The Marital Satisfaction Scale (MSS)

Please use the following scale to indicate the degree of your agreement or disagreement with each of the statements below. Record your answer to each statement in the space provided.

	Agree	Disagree	Neither Agree Nor Disagree
My spouse is very loving and affectionate.			
My spouse and I have similar ambitions and goals.			
My spouse and I have marital difficulties.			
My spouse really gets on my nerves.			
My spouse and I do not communicate well with each other.			
My marriage is not as good as most marriages.			
I am very happy with my marriage.			
My spouse and I seldom laugh together.			
My spouse and I agree on how to spend our leisure time.			
My spouse and I often argue about finances.			
I am pleased with my relationship with my spouse.			
I often contemplate ending my marriage.			
My spouse and I agree on our dealings with our in-laws.			
My spouse is generally understanding.			

Appendix C: Recent Stressful Life Events

The following questions are about some other events or problems which may have happened to you during the past 6 months.

	Yes	No
*Serious illness or injury to subject	17	29
*Serious illness or injury to a close relative	49	68
*Death of first-degree relative	17	1
*Death of close family friend or second-degree relative	14	25
Separation due to marital difficulties	6	2
Broke off a steady relationship	12	10
Serious problem with a close friend, neighbour or relative	8	15
Unemployed/seeking work for more than one month	8	19
Subject sacked from job	6	8
Major financial crisis	11	3
Problem with police and court appearance	6	8
*Something valuable lost or stolen	11	18
Total	165	206

* Events which are likely to be independent of the subject's symptoms.

Appendix D : Close Persons' Questionnaire

This section concerns people in your life who you feel close to and from whom can obtain support (either emotional or practical) including close relatives and good friends.

How many people do you feel very close to? (It does not matter where they live or whether you have seen them recently).

PLEASE WRITE NUMBER IN THIS BOX 

Who have you felt closest to in the last 12 months? Please describe them in terms of their relationship to you (e.g. wife, son, aunt, boyfriend, male friend, female friend).

.....

For the following questions, please tell us how you would rate the practical and emotional support given to you by this person in the last 12 months.

Use this scale: **1** **2** **3** **4**

Not at all A little Quite a lot A great deal

1) How much, in the last 12 months ... did this person give you information, suggestions and guidance that you found helpful?

2) How much, in the last 12 months ... could you rely on this person (was this person there when you needed him/her)?

3) How much, in the last 12 months ... did this person make you feel good about yourself?

4) How much, in the last 12 months ... did you share interests, hobbies and fun with this person?

5) How much, in the last 12 months ... did this person give you worries, problems and stress?

6) How much, in the last 12 months ... did you want to confide in this person?

7) How much, in the last 12 months ... did you confide in this person?

8) How much, in the last 12 months ... did you trust this person with your most personal worries and problems?

9) How much, in the last 12 months ... would you have liked to have confided more in this person?

10) How much, in the last 12 months ... did talking to this person makes things worse?

11) How much, in the last 12 months ... did he/she talk about his/her personal worries with you?

12) How much, in the last 12 months ... did you need practical help with this person with major things (e.g. to look after you when ill, help with finances, children)?

13) How much, in the last 12 months ... did this person give you practical help with major things?

14) How much, in the last 12 months ... would you have liked more practical help with major things from this person?

15) How much, in the last 12 months ... did this person give you practical help with small things when you needed it (e.g. chores, shopping, watering plants, etc.)?

Social Network Scale

1) Are there any relatives outside your household who you regularly visit or who visit you?

a. Almost daily

b. About once a week

c About once a month

d Once very few months

e. Never or almost never

f. No relatives outside household

2) How many relatives do you see once a month or more?

a. None
b. 1 – 2
c. 3 – 5
d. 6 – 10
e. More than 10

3) How often do you every see anyone from work, socially out of work hours?

a. Almost daily
b. About once a week
c. About once a month
d. Once every few months
e. Never or almost never

4) Do you have any friends or acquaintances you visit or who visit you? (Not necessarily the same person each time).

a. Almost daily
b. About once a week
c. About once a month
d. Once every few months
e. Never or almost never

5) How many friends or acquaintances do you see once a month or more?

a. *None*
b. *1 – 2*
c. *3 – 5*
d. *6 – 10*
e. *More than 10*

6) How often do you attend religious services (apart from weddings and funerals)?

a. *Almost daily*
b. *About once a week*
c. *About once a month*
d. *Once every few months*
e. *Never or almost never*

7) Do you belong to any clubs or organisations (social or recreational groups, trade union, commercial groups, professional organisations, political parties, sports clubs, cultural groups, pressure groups, etc)?

a. *Yes*

b. *No*

If YES to above

8) Taking all of these activities together, how often do you attend clubs or organisations?

a. *Almost daily*
b. *About once a week*
c. *About once a month*
d. *Once every few months*
e. *Never or almost never*

Household composition

9) Does anyone live in your household besides you?

a. *Yes*
b. *No*

If YES to 9)

10) Who lives in your household besides you?

a. Spouse or partner	*(1=Yes, 2=No)*
b. Your mother	*(1=Yes, 2=No)*
c. Your father	*(1=Yes, 2=No)*
d. Your spouse's mother	*(1=Yes, 2=No)*
e. Your spouse's father	*(1=Yes, 2=No)*
f. Children under 5	*(write down number)*
g. Children aged 5 – 15	*(write down number)*
h. Children over 15	*(write down number)*
i. Any other people	*(write down number)*

Appendix E : Gender Disadvantage - Overview Summary Questions

1) Did you ever feel that your parents would have preferred you to have been a boy?

2) Did you ever feel that your parents favored your brothers or other male relatives over you?

Appendix F : WHODAS *II*

SECTION 1. Face Sheet

	ITEMS F1- F6 ARE TO BE COMPLETED BY INTERVIEWERS PRIOR TO STARTING EACH INTERVIEW	
F1	RESPONDENT I.D . #	☐☐☐ - ☐☐☐ - ☐ CENTRE # - SUBJECT #
F2	INTERVIEWER I.D. #	☐☐☐ - ☐☐☐ - ☐ CENTRE # - INTERVIEWER #
F3	ASSESSMENT TIME POINT (1, 2, ETC.)	☐
F4	INTERVIEW DATE	____/____/____ month day year
F5	LIVING SITUATION AT TIME OF INTERVIEW (CIRCLE ONLY ONE)	Independent in Community 1 Assisted Living 2 Hospitalized 3
F6	SAMPLE *(CIRCLE ONLY ONE)*	General population 1 Drug related problems 2 Alcohol related problems 3 Mental health problems 4 Physical problems 5 Other (*specify*) 6 _____

SECTION 2. DEMOGRAPHIC AND BACKGROUND INFORMATION

PREAMBLE

This interview has been developed by the World Health Organization to better understand the difficulties people may have due to their health conditions. The information that you provide in this interview is confidential and will be used only for research.

FOR RESPONDENTS FROM THE GENERAL POPULATION (NOT THE CLINICAL POPULATION) SAY: Even if you are healthy and have no difficulties, it is necessary that I ask all of the questions for completeness.

I will begin with some background questions.

A1	**RECORD SEX AS OBSERVED**	Female Male	1 2
A2	How old are you now?		___/___ years
A3	How many years in all did you spend studying in school, college or university?		___/___ years
A4	What is your current marital status? ***(SELECT THE SINGLE BEST OPTION)***	Never married Currently married Separated Divorced Widowed	1 2 3 4 5

A5	Which describes your <u>main work status</u> best? ***(SELECT THE SINGLE BEST OPTION)***	Paid work	1
		Self employed, such as own your business or farming	2
		Non paid work, such as volunteer or charity	3
		Student	4
		Keeping house/Homemaker	5
		Retired	6
		Unemployed (health reasons)	7
		Unemployed (other reasons)	8
		Other *(specify)*	9

SECTION 4. CORE QUESTIONS

H1	How do you rate your <u>overall health in the past 30 days</u>? *Read choices to respondent.*	Very good	Good	Moderate	Bad	Very Bad

SHOW FLASHCARD #2 to participant

In the last 30 days <u>how much difficulty did you have in</u>:

		None	Mild	Moderate	Severe	Extreme /Cannot Do
S1	<u>Standing</u> for <u>long periods</u> such as <u>30 minutes</u>?	1	2	3	4	5
S2	Taking care of your <u>household responsibilities</u>?	1	2	3	4	5
S3	<u>Learning</u> a <u>new task</u>, for example, learning how to get to a new place?	1	2	3	4	5
S4	How much of a problem did you have <u>joining in community activities</u> (for example, festivities, religious or other activities) in the same way as anyone else can?	1	2	3	4	5
S5	How much have <u>you</u> been <u>emotionally affected</u> by your health problems?	1	2	3	4	5

Continue to next page...

In the last 30 days how much difficulty did you have in:						
		None	Mild	Moderate	Severe	Extreme /Cannot Do
S6	Concentrating on doing something for ten minutes?	1	2	3	4	5
S7	Walking a long distance such as a kilometre [or equivalent]?	1	2	3	4	5
S8	Washing your whole body?	1	2	3	4	5
S9	Getting dressed?	1	2	3	4	5
S10	Dealing with people you do not know?	1	2	3	4	5
S11	Maintaining a friendship?	1	2	3	4	5
S12	Your day to day work?	1	2	3	4	5

		None	Mild	Moderate	Severe	Extreme /Cannot Do
H2	Overall, how much did these difficulties interfere with your life? *Read choices to respondent.*	1	2	3	4	5
H3	Overall, in the past 30 days, how many days were these difficulties present?	RECORD NUMBER OF DAYS ___/___				
H4	In the past 30 days, for how many days were you totally unable to carry out your usual activities or work because of any health condition?	RECORD NUMBER OF DAYS __/__				
H5	In the past 30 days, not counting the days that you were totally unable, for how many days did you cut back or reduce your usual activities or work because of any health condition?	RECORD NUMBER OF DAYS __/__				

Appendix G: Self Reporting Questionnaire (SRQ-20)

1. Do you often have headaches?	Yes/no
2. Is your appetite poor?	Yes/no
3. Do you sleep badly?	Yes/no
4. Are you easily frightened?	Yes/no
5. Do your hands shake?	Yes/no
6. Do you feel nervous, tense or worried?	Yes/no
7. Is your digestion poor?	Yes/no
8. Do you have trouble thinking clearly?	Yes/no
9. Do you feel unhappy?	Yes/no
10. Do you cry more than usual?	Yes/no
11. Do you find it difficult to enjoy your daily activities?	Yes/no
12. Do you find it difficult to make decisions?	Yes/no
13. Is your daily work suffering?	Yes/no
14. Are you unable to play a useful part in life?	Yes/no
15. Have you lost interest in work?	Yes/no
16. Do you feel that you are worthless person?	Yes/no
17. Has the thought of ending your life been on your mind?	Yes/no
18. Do you feel tired all the time?	Yes/no
19. Do you have uncomfortable feelings in your stomach?	Yes/no
20. Are you easily tired?	Yes/no